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THE PROVINCE OF
SASKATCHEWAN
CANADA

Its development and
opportunities

By
F. H. Kitto.



Department of the Interior
Canada

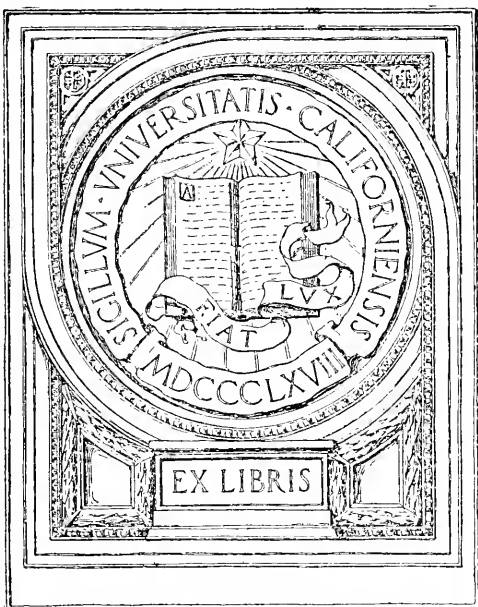
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Minister

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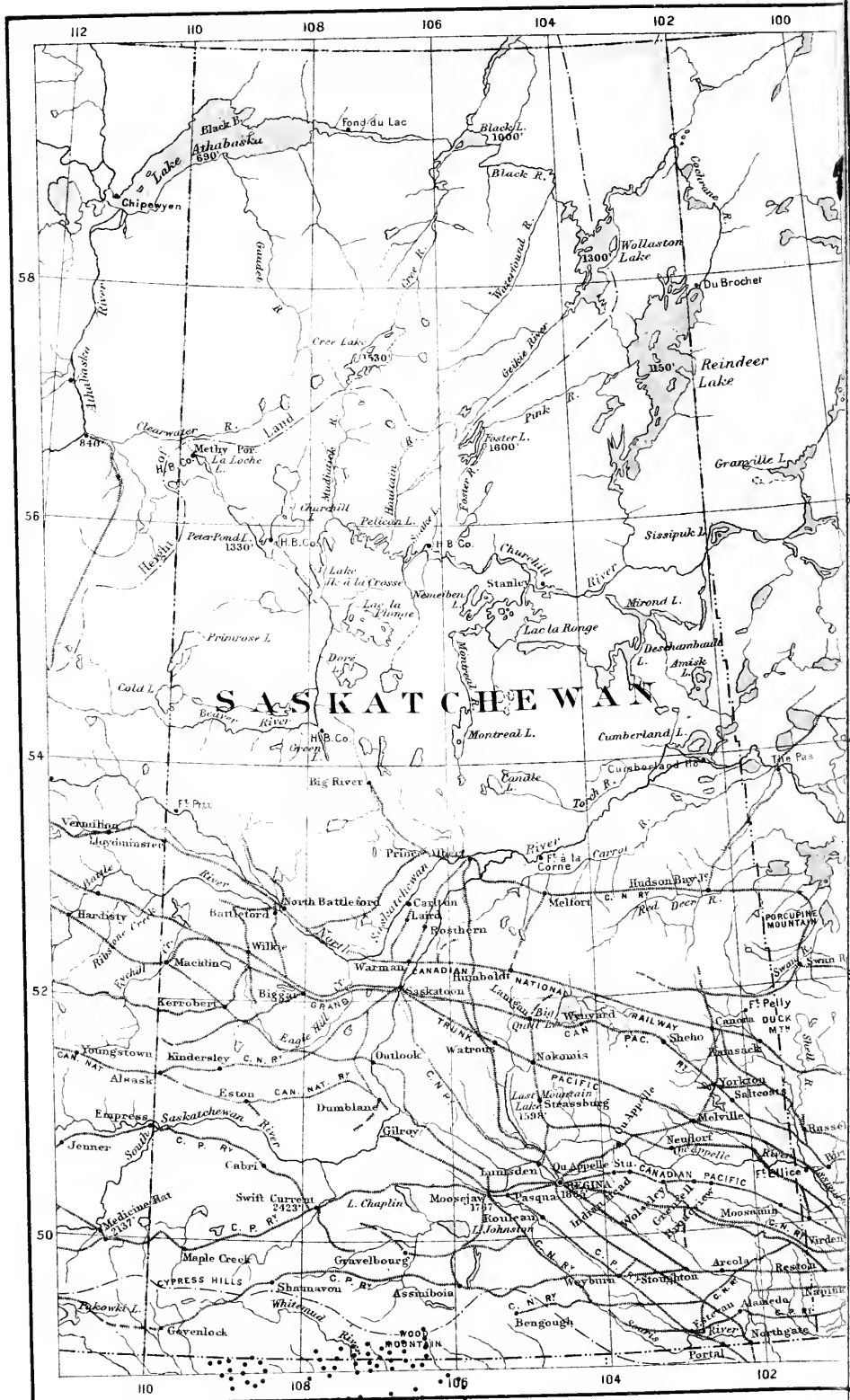
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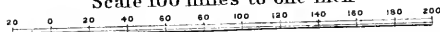


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MAP OF SASKATCHEWAN

Scale 100 miles to one inch



THE
PROVINCE OF SASKATCHEWAN
CANADA

ITS DEVELOPMENT AND OPPORTUNITIES

By
F. H. KITTO, D.L.S., A.M.E.I.C.

Prepared under the direction of the Superintendent
Natural Resources Intelligence Branch

Department of the Interior
Canada
Hon. Arthur Meighen W. W. Cory, C.M.G.
Minister Deputy Minister

1919

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HISTORICAL DESCRIPTION

The prairies of Western Canada need no introduction. The fame of their wonderful magnitude and their unrivalled beauty has already spread the world over, while the romance of the transition from the buffalo hunting grounds of the red man to the wheat fields of the white is already history. At an early date the poet Bryant immortalized them in his lines entitled "The Prairies," wherein he described them as "the gardens of the deserts" and "the unshorn fields, boundless and beautiful." Like the mighty ocean they stretch away in every direction from the eye till their gently undulating waves of verdant vanish in the misty circle of the distant horizon. Day after day the early explorers pushed their way across these unbroken solitudes, and night after night pitched their camps under the starry heavens, with the same vista always about them. What visions of the future they saw can only be imagined, but, with the multitudes of gorgeous flowers and the luxuriant vegetation carpeting their route, they must surely have realized that a great heritage of opportunity lay there. Even the transcontinental traveller of to-day, though schooled to expect it, marvels at the outlook. All day long his train rushes on its way, and from the first break of dawn till the lingering twilight shuts out the view the eye strains and fails to see any discord in the symmetry of the prairie gardens.

From these mighty plains have been carved out three great provinces, the "prairie provinces" of Canada, of which Saskatchewan occupies the middle location. Their northerly limits extend beyond the plains, however, into the more rugged and complex districts of the Laurentian region, thus giving a field of more varied resources to draw upon and round out their internal completeness.

The province of Saskatchewan embraces the heart of the prairies, and the lion's share of their choicest lands. To the east lies Manitoba and to the west Alberta. Here in the midst of the great grain belt it has developed within a few short years into the greatest wheat-producing province of the Dominion, and can boast of the most extensive unbroken area of first-class wheat land to be found anywhere in the world. The march of progress is now in full swing and the opportunity to share in the great growth that is to be witnessed in this province in the immediate future is open to all who may desire to cast in their lot with her people.

The southerly boundary of the province is the International boundary line between Canada and the United States, being the 49th parallel of north latitude. The states of North Dakota and Montana are immediately adjacent to this line. The northerly boundary is the 60th parallel of north latitude, beyond which lie the Northwest Territories. In length, then, it extends over 11 degrees of latitude and measures 761 miles. Its width gradually decreases from 393 miles, at the International boundary, to 277 miles at the northerly end, extending from an irregular line between longitude 101° 30' and 102° West, to longitude 110° West. The average width is 335 miles.

Saskatchewan is essentially an agricultural province and predominates in the production of wheat. The remarkable fertility of its soil, the ease with which its prairies could be brought under cultivation, and the wonderful successes of its crops have resulted in a more rapid development along these lines than any other district in the world can boast of. To maintain its supremacy, however, it will become necessary to practice more scientific methods of farming than are required during the first few years, and already mixed farming is receiving more attention. Following the rural activities, urban centres have sprung up with amazing rapidity and the many-sided perplexities of a young nation have demanded attention. Since the creation of the province in 1905 the provincial government has taken most progressive steps, and enacted far-seeing legislation to ensure the prosperity of this community and guarantee the welfare of its people.

The history of Saskatchewan is brief and rather uneventful compared with that of the older provinces of Canada. However, it has its romances and one rebellion to mark its transition from the primeval to the modern. The provinces of Saskatchewan and Alberta are the youngest of the Confederation, and as such have a history dating back barely over a dozen years. The evolution leading up to the culmination of provincial status might be said to date from about the year 1870, when the lands now comprising the three prairie provinces and the territories were acquired by the Dominion of Canada. Prior to this date the history of Western Canada is the history of its fur trade, covering a period of some 200 years. The name "Saskatchewan" is a corruption of a Cree Indian expression signifying "swift current," or "rapid river." It was originally applied by the natives to any river having such peculiarities, but soon became restricted by the whites to the one great river of the fertile belt. The name was later given to one of the territorial divisions and finally adopted by the province.

From 1670 to 1870 the Hudson's Bay Company constituted the chief power throughout this area. Prince Rupert's lands were supposed to include the whole of the Great Plains, and in these lands the Hudson's Bay Company claimed absolute authority under the terms of their royal charter. The French, however, had early laid claim to Western Canada, and as the Company's charter excepted such lands as were owned or claimed by other Christian powers, a clash of interests would have undoubtedly occurred had not the cessation of Canada by the French to the English in 1763 taken place before the advance guards of either the Company or the French explorers came together. In 1783 the United States of America gained their independence, but the international dividing line in the West was amicably agreed upon in the choice of the 49th parallel of latitude. All questions of inter-state having thus been disposed of before the colonization of this district, its development has been confined entirely to internal affairs.

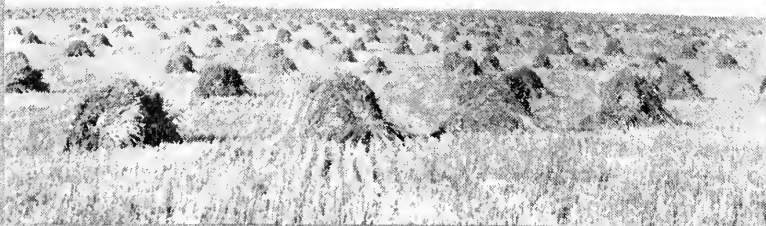
In 1811 the Hudson's Bay Company granted to the Earl of Selkirk 74 million acres of land on which to establish a colony. A settlement was made with the Indians for their claims and the famous Red River Colony, the pioneer agricultural settlement of Western Canada was forthwith launched on its stormy career. The government of this colony was entirely in the hands of the Hudson's Bay Company. This sufficed in the early days but outlived its

scope as the colony grew, so that in the course of some 50 years a more democratic form of government became imperative. A fur-trading company might be expected to carry out the preliminary colonization of a territory but it is impossible to conceive of its constituting the sole governing power of such colony when it has advanced beyond the first stages. The legality of the Company's claims to such authority brought matters to a climax.

In 1867 the Dominion of Canada came into existence under the British North America Act. One of the first acts of the Government was to take steps to acquire the unorganized British possessions of Western Canada and to introduce a form of government commensurate with the requirements and well-being of its settlers. The claims of the Hudson's Bay Company were accordingly adjusted and for a small consideration these British possessions became the asset of the new Dominion. Some opposition to the new arrangement was manifested in the Riel rebellion of 1869, but proved only temporary. In 1870 the re-arrangement took effect. The province of Manitoba was created and the remainder of the lands made into the Northwest Territories. The Lieutenant Governor of Manitoba was made, ex-officio, Lieutenant-Governor of the Northwest Territories, assisted by the Executive Council.

The political history of Saskatchewan, therefore, dates only from 1870 with this nucleus of government. In 1875 the territory was conceded a Lieutenant-Governor of its own, while in 1882 the provisional districts of Assiniboia, Saskatchewan, Alberta, and Athabaska were made. In 1885 there occurred the Saskatchewan rebellion, otherwise known as the Northwest Rebellion of 1885 or the second Riel Rebellion. The encroachment of white settlers upon the lands claimed by the Indians and half-breeds, and, perhaps even more than this, the manner in which the latter were being hemmed in and restricted, led to this armed resentment. Its speedy suppression and prompt adjustment of just complaints marks the last forceful display of the red man's objection to the advance of civilization.

A rebellion naturally attracts considerable attention to the district affected. In this case it resulted in a large influx of settlers who came to avail themselves of the opportunities this fertile district offered. It also resulted in bringing to the scanty population of pioneer settlers a voice in the management of their own affairs, representation at Ottawa being granted in 1886. This was followed two years later by the creation of a local legislature whose powers were enlarged in 1890 to include the control of all territorial expenditure. In 1897 the Executive Council was made responsible to the legislature thus giving to the four provisional districts of Assiniboia, Saskatchewan, Alberta and Athabaska a responsible government with considerable latitude. In 1905 the Dominion government created out of these four districts the two provinces of Saskatchewan and Alberta which took their places with the seven older provinces of the Confederation on the 1st September. The province of Saskatchewan practically swallowed up the old districts of Assiniboia, Saskatchewan and the east half of Athabaska, the province of Alberta taking the district of Alberta and the west half of Athabaska. The first provincial government consisted of a Lieutenant-Governor and a Legislative Assembly of twenty-five members. The representation in the House of Commons consisted of six members and in the Senate of four.



Harvest Fields of Saskatchewan.

According to the terms of the British North America Act Quebec was to be made the basis of representation with 65 members in the House of Commons, the other provinces being represented according to their population. A Dominion census was arranged to be taken every ten years following which the necessary re-adjustment in representation could be made, the unit being derived from one-sixty-fifth of the population of Quebec. The rapid growth of the population of Saskatchewan has resulted in an increased representation at Ottawa which now consists of 16 members in the House of Commons and 6 members in the Senate. The Provincial Legislature has also extended in numbers as newly opened districts have been given representation. It now consists of 62 members, 59 of whom are elected from regular constituencies while 3 represent the soldier population of the province.

The first gubernatorial honour of the newly created province of Saskatchewan was conferred upon the Honourable A. E. Forget, who was fulfilling his second term as Lieutenant-Governor of the Territories when the autonomy bills were introduced. To the Honourable Walter Scott was given the distinction of becoming Saskatchewan's first premier and the government he formed still holds office though the personnel of the original body has almost entirely changed. The late Honourable Geo. W. Brown was the second Lieutenant-Governor and he was succeeded by the Honourable Richard Stuart Lake who now holds office. Owing to ill health Premier Scott was forced to retire from the leadership of the government after a term of eleven years. He was succeeded by the Honourable W. M. Martin, the present premier. The Territorial capital of Regina, falling conveniently within the boundaries of the newly created province of Saskatchewan, was chosen as its capital, thus linking the history of the old with the new. Except for the control of Crown lands and natural resources the province is on a par as regards self government with the older members of Confederation and the demand for the conferring of this privilege upon her by the Dominion Government constitutes one of the chief political topics of the day.

Area and Population

The area of Saskatchewan is 251,700 square miles. Of this 8,329 square miles are covered by water leaving 243,381 square miles of land. The province exceeds in extent that of any European country except Russia. It is greater than Austria-Hungary, Germany or France. It is more than double the combined area of England, Wales, Scotland, and Ireland, also more than double the area of Italy and more than twenty times that of Belgium.

Of the total land area of Saskatchewan some 94 million acres are believed to be suitable for agricultural purposes. Of this less than 20 million acres have as yet been improved. Most of the land area unsuitable for agriculture is capable of producing forests of economic value, while the water areas are invaluable for their fisheries resources.

The population according to the Quinquennial census of June 1, 1916, was 647,835 of which 363,787 were males and 284,048 females. The growth of the population during the past fifteen years has been very rapid as shown on the following table.

SASKATCHEWAN—Population

Year	Population	5-year Increase
1901.....	91,279	
1906.....	257,763	182.4 per cent
1911.....	492,432	91.0 “
1916.....	647,835	31.6 “

The total urban population in 1916 was 176,297 or 27.22 per cent as compared with the rural population of 471,538 or 72.78 per cent. The average number of persons per family was 4.29. The rapid increase of population was principally due to heavy immigration during the years preceding the war. Some details of this are shown on the following table.

IMMIGRANT Arrivals in Canada and Saskatchewan since 1906

Dominion fiscal year	Immigrant arrivals from				Total	Immigrants to Saskatchewan	Per cent. of total
	United Kingdom	United States	Per cent of total	Other countries			
1906.....	86,796	57,796	30.5	44,472	189,064	28,728	15.1
*1907.....	55,791	34,659	27.8	34,217	124,667	15,307	12.2
1908.....	120,182	58,312	22.2	83,975	262,469	30,590	11.6
1909.....	52,901	59,832	40.7	34,175	146,908	22,146	15.0
1910.....	59,790	103,798	49.7	45,206	208,794	29,218	13.1
1911.....	123,013	121,451	39.0	66,620	311,084	40,763	13.1
1912.....	138,121	133,710	37.7	82,406	354,237	46,158	13.0
1913.....	150,542	139,009	34.5	112,881	402,432	45,147	11.2
1914.....	142,622	107,530	27.8	34,726	384,878	40,999	10.6
1915.....	43,276	59,779	41.2	41,734	144,789	16,173	11.1
1916.....	8,664	36,937	76.1	2,936	48,537	6,001	12.3
1917.....	8,282	61,389	81.4	5,703	75,374	9,874	13.1

*Immigrant arrivals for 1907 are for nine months only.

Physical Features

The geographical features of Canada may be divided into five sections, in two of which the province of Saskatchewan lies. These divisions are: (1) The Appalachian Region, occupying the Maritime Provinces and eastern Quebec and underlain by folded sediments and igneous rocks. (2) The St. Lawrence lowlands of southern Quebec and southern Ontario underlain by nearly horizontal sediments. (3) The plain region of Manitoba, Saskatchewan and Alberta underlain by flat-lying sediments. (4) The Laurentian plateau, consisting of vast upland surrounding Hudson Bay and underlain chiefly by igneous rocks, such as granite, together with a lesser amount of hardened sedi-

ments. (5) The Cordilleran region, the mountainous region extending from the Rocky Mountains to the Pacific Coast and underlain by folded sediments and igneous rocks.

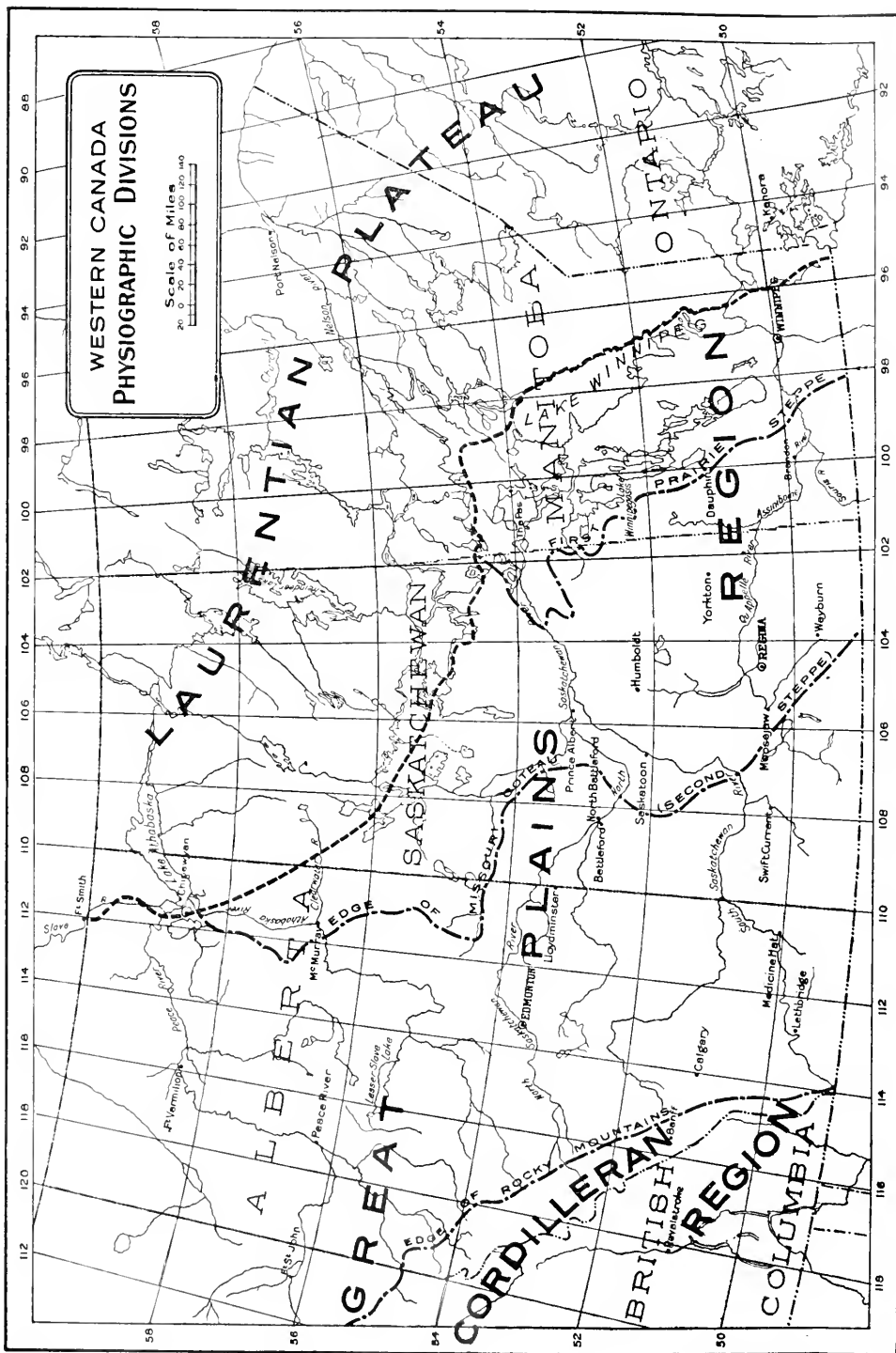
The southern part of Saskatchewan occupies a part of the third division or Plain region, while the northern part falls within the fourth division or Laurentian plateau. Without considering these regions in their entirety it is impossible to get a proper conception of the geographical features of the province, which in itself comprises no independent feature of peculiar prominence. The Plain region has been described in most instructive language by Dr. Bruce Rose of the Geological Survey of Canada while Mr. Wyatt Malcolm, of the Department of Mines, Ottawa, has given a lucid pen picture of the Laurentian plateau. The information in this connection has been obtained from these reliable sources.

The topography of the Great Plains is essentially that of a base-levelled surface. It is a plain developed on nearly flat-lying, soft strata—clays, shales, and friable sandstones—and over great areas the slope of the Plain corresponds to the dip of the underlying strata; but, considered as a whole, the surface is seen to bevel the strata at small angles. It owes its flatness partly to the horizontality of the strata, but primarily to base-levelling by normal erosion. The origin of the Plains is, then, in part structural and in part erosional. They were formed in pre-Glacial times and the surface has been modified by glacial scour and deposition. It is, in general, a region of rolling prairie, interrupted by ridges and valleys.

The evenness of the surface is in places made more complete by the filling of the hollows with superficial deposits and in places broken by the piling up of superficial deposits in ridges. The superficial deposits are almost wholly of glacial origin and were deposited during the retreat of the continental glaciers. The fillings are outwash and lake deposits as is shown by their sorted and stratified condition, and the ridges are morainal deposits. A veneer of boulder clay mantles the surface almost everywhere.

The underlying rock formations of the Great Plains are for the most part of Cretaceous age, but here and there plateaus of Tertiary rock stand above the general level. These are remnants of much more widely distributed Tertiary deposits, the greater part of which has been denuded away during the base levelling process. The rise from the Plains to the plateaus is usually abrupt. The boundaries of the plateaus are commonly marked by clay bluffs, particularly on the south and west sides. The north and east slopes are, as a rule, covered with a mantle of boulder clay. The plateau surfaces are, like the Plains' surfaces, rolling prairies and the question arises as to whether they owe their flatness to the original, horizontal position of the strata, or represent the remnants of a previous, base-levelled surface like that of the Great Plains.

The valleys cut below the level of the Plains detract very little from the apparent evenness of the general plains surface. They are noticeable only when the observer is in their immediate vicinity and are lost to view from the broad interstream areas. The valleys are of two types. Streams such as the Saskatchewan with headwaters in the Rocky mountains and with a perennial flow have cut canyon-like valleys in the soft strata, while streams with headwaters on the Plains and an intermittent flow usually have shallow valleys. Streams



of the latter type have their sources in an intricate system of ramifying and inosculating coulees especially when they head in the rocks of the Tertiary plateaus, mentioned above.

A second and earlier system of stream courses, in part coinciding with the present system, is marked by valleys which are now abandoned or in which the present streams are so small as to be wholly inadequate to account for their excavation. These valleys were excavated at a time when the climate was much more humid and the precipitation consequently much greater than at present, probably during the retreat of the continental glaciers. The abandoned valleys are commonly occupied at intervals along their courses by shallow saline lakes, or for short distances by intermittent streams.

Over considerable areas, the evaporation is equal to the precipitation and there is an almost absolute lack of running water. In some areas the surface water is concentrated in lakes with no outlets, giving, locally, an interior basin drainage.

The southern part of the Great Plains in Canada is divided into three steppes by two eastward facing escarpments. The first steppe or lowest prairie level is that of the Red River valley, the Winnipeg system of lakes and the flat land surrounding them. This Plain is developed on Palaeozoic rocks, and in that respect differs from the more typical Great Plains to the west, which are developed on the soft Cretaceous rocks. It was occupied on the retreat of the continental glacier by a great lake—glacial Lake Agassiz—and the surface is deeply mantled with boulder clay and with alluvium deposited in the lake. It has an average elevation of about 800 feet above the sea and drains to Hudson Bay by way of the Nelson river.

The passage from the first to the second steppe is over a rise or eastward facing escarpment of Cretaceous rocks, known as the Manitoba escarpment. The drainage channels from the second to the first steppe are wide and divide the escarpment into several prominent groups of hills known as the Pembina, Riding, Duck, Porcupine, and Pasquia hills. The summits of these hills rise from 500 to 1,000 feet, in places more, above the level of the first steppe.

West of the Manitoba escarpment the Cretaceous Plains stretch away to the foothills of the Rocky mountains. The elevation above the sea increases gradually from less than 1,500 feet to more than 4,000 feet. This is the area occupied by the second and third steppes. The second steppe lies between the Manitoba escarpment and the Missouri coteau, an eastward facing escarpment of Tertiary rocks. This escarpment is the eastern boundary of the Wood Mountain plateau, one of the Tertiary remnants mentioned above. The eastern boundary and a northwesterly trending arm from it form a steplike rise of from 200 to 500 feet; but since there is an equal drop on the western side of the Tertiary remnant the Missouri coteau does not mark a rise from one prairie level to another as the Manitoba escarpment does. It forms, however, a convenient dividing line on the Plains. East of it, the boulder clay deposit is thicker than to the west and the front of the escarpment is almost everywhere deeply covered with the boulder clay. It seems probable that the coteau acted as a barrier to ice advancement at certain stages of the glacial period and that the great thickness of glacial accumulations along the front of it and to the east are to be accounted for in this way.

The third steppe reaches from the Missouri coteau to the foothills. It is in general like the second steppe but the superficial deposits covering it are thinner; and, while there is only Tertiary plateau on the second steppe (Turtle mountain, along the boundary between Manitoba and North Dakota), there are a number of such residuals on the third steppe. Chief among these is the Wood Mountain plateau, and the Cypress Hills plateau.

This threefold division of the Great Plains is chiefly useful for descriptive purposes. The actual decrease of elevation in passing from one steppe to the next lower is small in comparison to the decrease due to the general eastward slope of the Plains. Despite minor irregularities—plateaus, valleys, and escarpments—they preserve their character as plains throughout and stand as one of the best samples known of an uplifted and base-levelled surface. The region is often described as a "rolling prairie," a general term that is aptly applied to the whole extent of the Plains.

The most extensive physiographic unit of Canada is the subdued Laurentian plateau. This is a gently sloping plateau of rather even surface, comparatively low and seldom rising 2,000 feet above the sea. The hills breaking the even surface rise but a few hundred feet at most above the general level.

It is a great U-shaped area surrounding Hudson Bay and extends from the Atlantic ocean, on the Labrador coast, west to a line running northwest through Lake Winnipeg, Lake Athabaska, Great Slave lake and Great Bear lake. It extends south to Lake Huron and Lake Superior, and occupies nearly all of the provinces of Ontario and Quebec, except the area southwest of a line running from Kingston to Georgian Bay, and that part of eastern Ontario forming the angle between the Ottawa and St. Lawrence rivers, and that part of Quebec south of St. Lawrence river.

This plateau is underlain by hardened sediments and igneous rocks. The latter are much more widespread than the former, and granitic types predominate. The rocks of this region are among the oldest rocks of which geologists have any knowledge. They are very resistant, and although they have been exposed to weathering since very early in the earth's history the inequalities in the surface features have not been wholly reduced. These inequalities have been augmented by glacial action. A further effect of glaciation was the denuding of much of this region of its soil. Generally speaking, therefore, the physiographic and soil conditions are not favourable to agricultural pursuits. Over a great part of the area, however, sufficient soil has been retained to support a forest growth, although insufficient for agriculture, and it is to be regretted that large stretches of such land have been depleted of their forests and have become dreary, barren wastes.

The province has a main easterly slope, draining almost entirely into Hudson Bay eventually, though by widely separated courses. A considerable area in the northwest corner falls within the Arctic watershed, while a few smaller streams in the hilly sections adjoining the International boundary find their way through a maze of tributaries into the great Mississippi.

The Arctic slope includes the Clearwater river, which flows westerly to join the Athabaska at McMurray, and the Cree and Black rivers, which drain into Lake Athabaska. Other lakes in this district are Cree, Black, Hatchet

and Wollaston, the latter being on the height of land between the Arctic and Hudson Bay slopes. From Lake Athabaska the flow follows the Slave river to Great Slave lake, thence the mighty Mackenzie extends northerly to the Arctic coast.

The northern part of Hudson bay slope is drained by the Churchill river of which the Beaver, Montreal, and Reindeer rivers are the main feeders in Saskatchewan. The principal lakes in this section are Reindeer, Lac la Ronge, Lac la Plonge, Montreal, Smoothstone, Dore, Primrose, Cold, Waterhen, Canoe, Ile à la Crosse, Clear, Buffalo, Peter Pond and Island. The central parts of the Plains are drained by the Saskatchewan river and its chief tributary the South Saskatchewan, which joins it a few miles below Prince Albert. Other tributaries include the Battle, Sturgeon, Sturgeon-Weir and Carrot, while the Red Deer river joins the South Saskatchewan just within the western boundary of the province. These waters flow into Lake Winnipeg at Grand Rapids, and are then carried to Hudson bay by the great Nelson river, the rival of the Mackenzie.

The south-eastern part of the province slopes quite preceptibly to the south and east and is drained by the Qu'Appelle, Assiniboine and Souris rivers. The latter runs across the International boundary for some distance, then makes a sharp detour and returns north, joining the Assiniboine, which in turn joins the Red at Winnipeg. Flowing into the south end of Lake Winnipeg the waters from these various sources pass through it and swell the Nelson on its flow to Hudson bay.

There is but little navigation on any inland waters of Saskatchewan. In early days shallow draught steamboats plied up and down the Saskatchewan from Grand Rapids to Edmonton, Prince Albert, Battleford, and Fort Pitt being on their line of route. The south Saskatchewan was navigated as far up as Medicine Hat in Alberta. Navigation was difficult owing to shallow water, sand and gravel bars, and rapids, though the course across the province is unbroken by any falls or other interruptions. Lake Athabaska is navigable by steamers from McMurray. The Churchill river is more in the nature of a chain of lakes joined by short stretches of swift flowing water, usually including rapids and falls which cannot be navigated, thus its route as a waterway is limited to the use of canoes or small boats which can be economically portaged around these numerous interruptions.

No elevations of striking prominence occur. A number of rocky knolls and ridges are found along the Churchill while the elevations of note in the Plains sections are known as the Porcupine, Duck, Wood, and Moose mountains and the Pasquia, Beaver, Touchwood, Pheasant, Weed, Cypress, and Thickwood hills.

The Geodetic Survey of Canada has projected a number of trunk lines of precise levels following the railway tracks in this province. The following table contains a list of their elevations for the more important cities and towns. The elevations given were taken on top of the rail in front of the stations as indicated.



*SASKATCHEWAN—PRECISE LEVELS

Station (Top of rail)	Elevation (In feet above sea level)
Regina, C.P.R.	1,896.4
Moosejaw, C.P.R.	1,778.7
Saskatoon, C.N.R.	1,589.7
Prince Albert, C.N.R.	1,413.3
Yorkton, C.P.R.	1,657.8
Estevan, C.P.R.	1,870.4
Weyburn, C.P.R.	1,857.3
Swift Current, C.P.R.	2,432.0
Maple Creek, C.P.R.	2,507.0
Biggar, G.T.P.R.	2,154.0

*Geodetic Survey of Canada.

Survey System

Before the Crown lands of the province are thrown open for settlement or otherwise disposed of they are first surveyed into parcels of the required dimension. As the federal government gained possession of the entire area now comprising the province before any surveys had been commenced, or any appreciable settlement made, it enabled them to adopt a regular system of subdivision. This has been carried out by the Surveyor-General of Canada with a staff of especially qualified Dominion Land Surveyors in the field and an office staff of draughtsmen and map makers, comprising the Topographical Surveys Branch of the Department of the Interior. The Dominion Land system of survey is the most comprehensive in the world. It extends uniformly over the whole of the western prairies and is especially adaptable to a plains country. Its checkerboard style enables one to determine the location of a given piece of land, either in the field or on the map, with the despatch and accuracy that an office record might be looked up by use of a modern cross index system, while its regular north-and-south and east-and-west lines give a succession of rectangular farms. The disadvantages that would arise from any system of survey resulting in triangular fields are only too obvious when one remembers that agricultural operations are now conducted on a large scale throughout the west. Nothing less than a four-horse outfit is seen in the fields, while six or eight are common, not to mention the ever increasing number of mechanical tractors with their array of farm implements following. The rectangular fields of the plains are ideal for such extensive farming operations.

The unit of survey is the township, being a quadrilateral area approximately 6 miles square containing 36 sections, each of 640 acres or 1 square mile, which on being divided into 4 equal parts gives the homestead "quarter section" of 160 acres. The lines bounding a township on the east and west sides are true meridians, and those on the north and south sides are chords of the parallels of latitude passing through the corners of the township. These "block" townships are designated entirely by the numerical system and bear no individual names.

Commencing at the 49th parallel of latitude (International boundary) they number from 1 upwards in regular order northerly. Tiers of these are called ranges and they are numbered in regular succession westerly from certain true north and south lines which have been adopted and surveyed as standards. These standards are called "Meridians" and those affecting the surveys of Saskatchewan are the Principal or First which is located approximately in Long. $97^{\circ} 27' 30''$ West, passing about 12 miles west of the city of Winnipeg; the Second, in Long. 102° West; the Third, in Long. 106° West, and the Fourth in Long. 110° West. Except between the Principal and Second Meridians there is a regular interval of 4 degrees of longitude. The eastern boundary of the province is the line between ranges 29 and 30 west of the Principal Meridian till it converges with the Second Meridian, which is then the boundary. The western boundary is the Fourth Meridian, so that with the exception of a few ranges west of the Principal, the whole of the province lies between the Second and Fourth Meridians. The Third Meridian passes approximately through the centre of the province.

Quarter sections are denoted according to the quadrants of the compass, north-west, north-east, south-west and south-east quarter-sections respectively. A location may, therefore, be designated in the briefest and clearest manner and at the same time its location indicated at a glance, for instance, the south-west quarter of section twenty-five, in township thirty-six and range seven, west of the Third Meridian, abbreviated thus: S.W. 25-36-7-W. 3. Working reversely, one finds the third meridian approximately in the centre of the province, then looking 7 ranges west and up 36 townships from the International boundary—the required township is located. The sections are numbered from the south-west corner, westerly across the township from 1 to 6, thence back along the next tier of sections, and across again on the next, and so forth, leaving section 36 in the extreme north-east corner as shown on the accompanying illustration. Section 25 is therefore readily located and from it the desired quarter. Remembering that each township is approximately 6 miles square, a moment's mental calculation will give the exact location of any piece of land so described.

At 24-mile intervals north of the 49th parallel of latitude lines are run westerly from one principal meridian to the next, following the same parallel of latitude by deflecting at every township corner. These are called "base lines" and are the basis on which the townships are first laid out, the 49th parallel being the first. Commencing at a main meridian a township is laid out by measuring off six sections of the precise width of 80 chains (1 mile) with a road allowance of 1 chain in width adjoining each. The township outlines are then run north and south to a depth of two townships in each direction, that is half way to the adjacent base lines on either side. Owing to the convergence and divergence of all meridian lines these township lines will converge north of the base line and diverge to the south of it, hence the lines run north from one base line will not connect with those run south from the next base line above it when the townships come together, but will necessitate a "jog." The outlines of the township are completed by joining the corners with east-and-west lines and the line between townships on which the jogs occur, that is midway between the base lines, is known as the "correction line."

The interior or subdivision lines of a township consist of north-and-south lines adjoining every section, and east-and-west lines adjoining every second section, with road allowances of 1 chain in width in all cases. Only one side of a road allowance is surveyed out and marked on the ground, except in the case of correction lines, where it is necessary on account of the jogs to mark the lands on each side of the road independently. Other exceptions arise in certain cases, for instance, where Indian reserves or other irregular parcels of land intervene. The lines regularly run consist of the east boundary of every section and the north boundary of the second, fourth and sixth tier of sections, that is the survey monuments will be found on the west and south sides of the roads. A post is planted every half mile, exclusive of road allowances, that is at every section and quarter section corner along the lines run. Township corners are marked by posts of a larger size than those used for sections and quarter-section corners.

In laying out the townships along a base line, the measurements, being carried westerly from one meridian to another, rarely, if ever, give an exact even number, hence fractional townships occur closing on the meridian. Owing to the convergence of these meridians themselves the length of each succeeding base line diminishes, hence the number of township widths or ranges will run out as the system is extended northerly. The accompanying diagrams illustrate the system for all practical purposes.

There are certain modifications in the methods of survey giving rise to five forms or systems, though all are based on the same principle. The system just described is known as the third and is almost universal. The first and second differ slightly from each other but for all practical purposes they are alike. They differ from the third by providing for a road allowance of one chain and fifty links (a chain and a half) in width on every side of a section. The first system includes the area lying between the eastern boundary of the province and the second meridian as far north as, and including, township 30. The second system embraces townships 1 and 2, ranges 1 to 8 inclusive; townships 19 to 30, ranges 1 to 12 inclusive, and townships 27 to 30, ranges 13 to 16 inclusive, all west of the Second meridian.

To facilitate the descriptions for letters patent of less than a quarter section, every quarter section is taken to be divided into quarter quarter-sections each of 40 acres more or less, and such quarter quarter-sections are styled "legal sub-divisions" and are numbered from 1 to 16 in similar manner to the numbering of the sections of a township, and as shown on the accompanying diagram.

Survey posts were originally of wood, then iron posts were introduced for township and section corners, the former being of larger diameter, while wooden posts were used for quarter section corners. Later iron posts were used entirely while during the last few years a new style of tubular post set low in the ground and with a bronze cap has been introduced. The corners were further marked by digging a set of 4 pits about the post, each pit being about 3 feet square and 18 inches deep. In wooded areas a pyramid-shaped mound was also built at the post. Where a corner fell in a pond or other unsuitable place it was perpetuated by erecting a "witness" monument on the line at the nearest edge of such obstruction and recording on the post the distance

and direction of the true corner. A circular trench was dug about such post and in the woods a cone-shaped mound was also built. The usual marking of the post is in Roman numerals, giving the number of the section at the north-east corner of which it stands, followed by the township and range, for instance, XV, XXIV, VIII reads north-east corner of section 15, township 24 and range 8. The meridian is not stated as a locator will know this. A quarter section post is merely marked " $\frac{1}{4}$ ".

It will be observed that the lines of this system of survey are run out on the ground irrespective of topographical irregularities except in the case of large bodies of water or inaccessible mountains. The land is thrown open for homestead on the basis of such survey. The old "trails" of the prairies followed the most direct routes or lines of least resistance so that new roads are required to keep pace with settlement. It is often found impracticable to construct such exactly within the confines of the stereotyped "road allowances". Ponds, steep cut-banks, or other obstacles frequently occur. Hence the highway engineers of the province, who construct the roads, find it necessary to make "road diversions" which are laid out around such obstacle by Provincial Surveyors, usually District Engineers of the provincial highway department.

A number of small settlements, chiefly along river valleys, had taken place before the regular system of survey had reached such districts. In order not to molest conditions and to allow each settler to retain his improvements as far as possible, the regular survey was suspended for the extent of such areas, and "settlement surveys" substituted, the individual parcels of land being laid off to the best advantage to all concerned and given lot numbers.

There is another form of survey which may be used in remote parts of the country, chiefly resorted to in survey of mineral claims, namely the "group lot". Parcels of land so surveyed are designated by lot and group numbers which are furnished the field surveyor on application to the head office.

Surveys on federal lands are made by Dominion Land Surveyors but recently an Association of Saskatchewan Land Surveyors has been formed with provincial jurisdiction to whom is entrusted such surveys as concern lands under the authority of the provincial government. The original survey of a homestead would be made by a federal surveyor but a subdivision of such parcel of land after the Crown grant had been issued would fall within the scope of the provincial surveyor.

GOVERNMENT

Canada is a self-governing colony of the British Empire. Though lacking the dignity that would be hers if gifted with the status of a nation the loss is more than compensated for by the benefits derived through being an integral part of so powerful a world-wide empire. National protection, trade advantages and other favours are hers as a colony, while the right of self-government leaves her to all intents and purposes, save for the gravest of international affairs, an independent country. The link that binds the colony to the mother country is the lightest possible though strong in the hearts of the people on both sides of the water.

Officially then, Canada, as part of the Empire, places her highest authority in the Sovereign and the Imperial Government. Her own government is modelled, as far as possible, after that of the Mother Country. The constitution of Great Britain has been many centuries in the making and the result—a limited monarchy—is generally admitted to be most satisfactory. Nominally the Sovereign rules but in reality the government of the country is carried on by the elected representatives of the people. Parliament is composed of two Houses, the Lords and the Commons, and from these Houses an Executive Council or Cabinet is chosen, which constitutes the real governing body of the country. The leader of the Cabinet, usually called the Premier, is in reality the actual head of the country's affairs as the Sovereign acts only on his advice.

To represent the Crown in Canada, the Sovereign, on the advice of his cabinet, appoints a Governor-General, who resides in the capital city of the Dominion during his term of office. Like the Sovereign he is nominally head of the colonial government but he too acts on the advice of his ministers. All new legislation must receive his approval before becoming effective. Should he consider that any such legislation is likely to prove unfavourable to the interests of the Empire it is his privilege and duty to refuse his consent, thus either causing its withdrawal or its being submitted for the consideration of the Imperial parliament. Such a state of affairs, however, is very unlikely to occur as legislation of such gravity would not be rushed through without wide discussion which would enable the attitude of the Imperial Government towards it to be known. It is thus evident that the position of the Imperial representative requires the presence of a man of great tact and a wide knowledge of affairs of state. Canada has been extremely fortunate in having had a succession of Governors-General of more than ordinary ability, who have proven themselves real leaders and who have welded closer and stronger the link of good fellowship binding her to the Empire.

The government of Canada, called the Federal government, is very similar to that of the Mother country. Representing the Sovereign, the Governor-General is at the head of affairs. The Parliament consists of two Houses, the Senate and the House of Commons. The members of the Senate are chosen for life by the Governor-General on the advice of his ministers. The Commons are elected by the people every five years, or at lesser intervals should Parliament

for any reason be dissolved within that time. An exception to this rule was made during the war when the life of Parliament was extended to six years because of the unusual conditions.

The political party having the majority in the House of Commons forms a government, choosing a number of their party, as a rule from the Commons though sometimes a few from the Senate, to form a Cabinet. The leader of the successful party heads the Cabinet as Prime Minister or Premier, the other members take charge of the various departments of the government's business and are styled Ministers. They carry on the business of the country till Parliament's term of five years has elapsed when they must dissolve it and have a general election. Frequently the election is brought on before the five years term is up. Should the government lose the confidence of Parliament and suffer a reverse on the floor of the Commons, or lose the confidence of the people and fail to have a majority of supporters elected at a general election the Governor-General receives their resignation and calls on the leader of their opponents (called the Leader of the Opposition) to form a new government.

This form of government has been in existence since the Dominion of Canada was formed by the confederation of the colonies of Upper and Lower Canada (Ontario and Quebec), Nova Scotia, and New Brunswick on July 1, 1867. Its constitution is set forth in The British North America Act. Manitoba joined the confederation in 1870, British Columbia in 1871, and Prince Edward Island in 1873. The provinces of Alberta and Saskatchewan were formed in 1905. The Yukon Territory is represented by one member in the Commons. Each province has representation in the Commons in proportion to its population and the members of the Senate are chosen along pretty much the same lines. The provinces then have individual governments of their own. The Dominion Parliament in 1918 was made up as follows:

REPRESENTATION IN FEDERAL HOUSES

Province	Commons	Senate
Ontario.....	82	24
Quebec.....	65	24
Nova Scotia.....	16	10
New Brunswick.....	11	10
Prince Edward Island.....	4	4
Manitoba.....	15	6
Saskatchewan.....	16	6
Alberta.....	12	6
British Columbia.....	13	6
Yukon (Territory).....	1	.....
Total.....	235	96

The Provincial Governments are formed along lines similar to the Federal Government. At the head, and representing the Federal Government, is a Lieutenant-Governor appointed by the Governor-General for a term of five years. His duties in the province correspond to those of the Governor-General

in the Dominion. Though nominally head of the province's affairs he acts on the advice of his government. It is his duty, however, to veto any Act which in his opinion might be detrimental to the interests of the Dominion at large. The government of the province consists of one House only, elected by the people, and called the Legislative Assembly. In Nova Scotia and Quebec, there is, in addition to the Legislative Assembly, a Legislative Council, the members of which are appointed for life by the Lieutenant-Governor in Council. In Prince Edward Island the Legislative Council is united with the Assembly, each of the fifteen constituencies electing a Councillor and a member to the Assembly. From this Assembly the Lieutenant-Governor calls upon the leader of the party having a majority of supporters to form an Executive Council, the leader being the Premier. This Council, like the Federal Cabinet, carries on the business of the province. The Legislative Assembly of Saskatchewan now consists of sixty-two members of whom fifty-nine were elected from regular constituencies and three by the soldiers of this province. The Executive Council consists of the premier and eight other ministers.

The Assembly has control of legislation and matters especially affecting the province while the Federal government controls matters of a wider nature. In order that there should be no doubt the British North America Act set forth the following list of subjects to which the exclusive authority of the Federal Government extends. (1) The public debt and property; (2) trade and commerce; (3) the raising of money by any kind of taxation; (4) the borrowing of money; (5) the postal service; (6) the taking of the census; (7) military and naval matters; (8) the payment of the officials employed by the government; (9) lighthouses; (10) navigation and shipping; (11) quarantine and marine hospitals; (12) fisheries; (13) ferries, except when entirely within a province; (14) currency and coinage; (15) banking and the issue of paper money; (16) saving banks; (17) weights and measures; (18) bills of exchange and promissory notes; (19) interest; (20) legal tender; (21) bankruptcy; (22) patents for invention; (23) copyrights on books, pictures, etc.; (24) Indians and Indian lands; (25) naturalization of foreigners; (26) marriage and divorce; (27) the criminal law; (28) penitentiaries; (29) matters expressly stated in the Act as not assigned to the province.

Those subjects over which the province was given legislative authority are set out in the following list:

(1) The amendment of the constitution of the province, except in regard to the office of lieutenant-governor; (2) direct taxation; (3) the borrowing of money on the sole credit of the province; (4) the civil service of the province; (5) the public lands, belonging to the province; (6) the prisons and reformatories of the province; (7) hospitals, asylums, and charitable institutions; (8) municipal institutions; (9) licenses, such as those of taverns, shops, and auctioneers; (10) local works and undertakings, except lines of steamships, railways, canals, telegraph, and other works and undertakings extending outside the province, and such works which, although wholly inside the province, are declared by the Dominion parliament to be for the general advantage of Canada, or of two or more of the provinces; (11) the incorporation of companies for business in the province; (12) the solemnization of marriage in the province; (13) property and

civil rights in the province; (14) the administration of justice in the province; (15) punishment by fine and imprisonment, in case any provincial law is broken; (16) generally all matters of a merely local or private nature in the province.

By a further provision in the British North America Act, the Legislature of each province may exclusively make laws relating to education within the province. There are also certain subjects, such as agriculture and immigration, over which both the Dominion and the provincial governments have jurisdiction. In case, however, the law passed by the province does not agree with that passed by the Dominion, the latter governs. Any law passed by the provincial government may be disallowed by the Dominion government within one year after the receipt of an official copy of the Act. This, however, is very seldom likely to occur, except when the Act is one that interferes with the general welfare of Canada or the Empire.

The Saskatchewan government at the close of 1918 was made up as shown on the following table:—

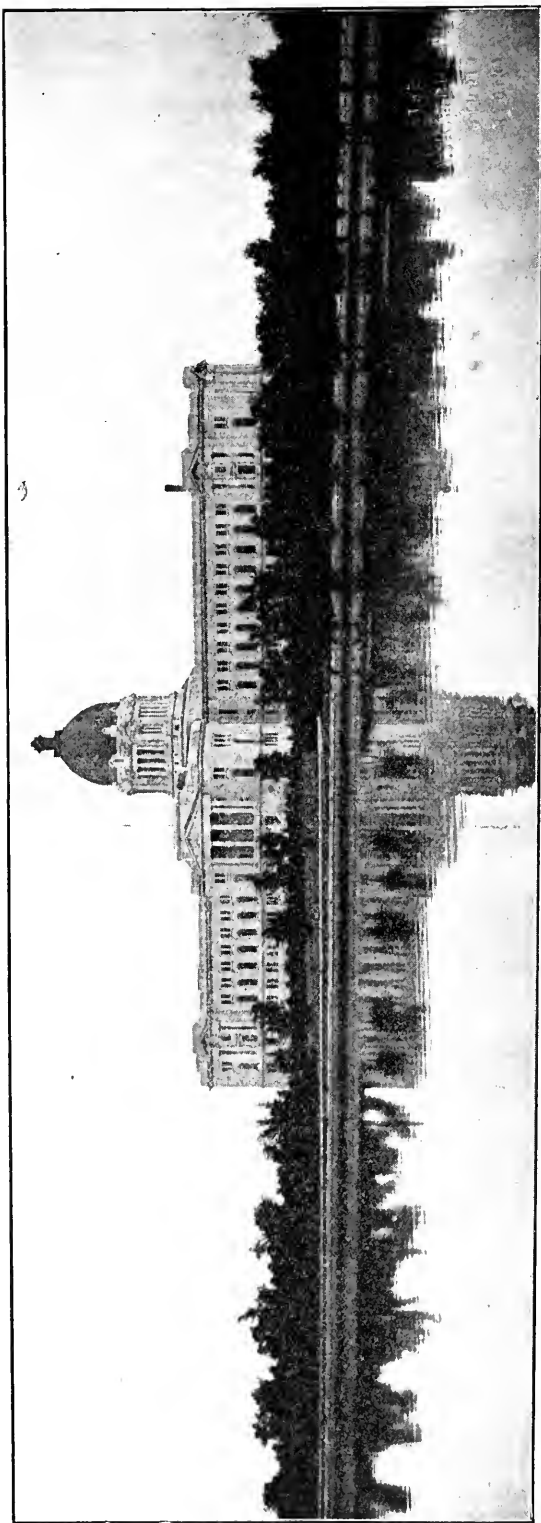
SASKATCHEWAN PROVINCIAL GOVERNMENT.

Capital.....	Regina.
Lieutenant-Governor.....	His Honour Richard Stuart Lake, Esq.

Executive Council

Premier, Minister of Education and President of Council.....	Hon. W. M. Martin, K.C.
Attorney General.....	Hon. W. F. A. Turgeon, K.C.
Provincial Secretary.....	Hon. W. E. Knowles
Minister of Highways.....	Hon. S. J. Latta
Minister of Agriculture.....	Hon. W. R. Motherwell
Minister of Municipal Affairs.....	Hon. Geo. Langley
Minister of Public Works.....	Hon. A. P. McNab
Provincial Treasurer and Minister of Railways.....	Hon. C. A. Dunning
Minister of Telephones.....	Hon. G. A. Bell

Following out the basic principal of self-government which characterizes the success of British rule everywhere the provincial government grants to local bodies of her residents the rights to manage their own affairs as they desire, restricted only in so far as necessary for the well-being of the province at large. Four forms of Municipal Government are provided for according to the progress and population of the community. Three provide for urban centres and one for rural settlements. They are graded in the following order of descending responsibility, cities, towns, villages and rural municipalities. These municipalities all receive their incorporation from the provincial government and are under the special care of the Minister of Municipalities. They elect their own officers, fix their assessment and tax rate, raise and spend money, make by-laws, and generally look to their own advancement and welfare under several provincial and federal regulations. Saskatchewan now has seven cities, seventy-five towns, three hundred and fourteen villages and five hundred and thirty-one rural municipalities.



Legislative Buildings, Regina, Saskatchewan.

The various forms of government as affecting citizens of Saskatchewan are outlined in the following chart.

Systems of Government

I. Imperial.....	{ Sovereign Parliament.....	{ House of Lords House of Commons
	Cabinet.....	{ Premier Ministers
II. Federal.....	{ Governor General Parliament.....	{ Senate House of Commons
	Cabinet.....	{ Premier Ministers
III. Provincial.....	{ Lieutenant-Governor Legislative Assembly	
	Executive Council..	{ Premier Ministers
IV. Municipal.....	1. City.....	{ Mayor Aldermen
	2. Town.....	{ Mayor Councillors
	3. Village.....	{ Overseer Councillors
	4. Rural Municipality.....	{ Reeve. Councillors.

Revenue

Funds necessary for the carrying on of the country's affairs by these legislative bodies are secured from various sources, of which taxation in its many forms, is the main source. Revenues derived from the exploitation of the country's natural resources constitute most of the balance. The Federal government administers the customs tariff which is the chief source of its revenue.

The provincial governments receive an annual subsidy from the Dominion government. In the case of Saskatchewan this subsidy is augmented considerably in lieu of Crown lands and natural resources which are still under the administration of the Dominion Government and of school lands held in trust by it. The subsidy for the year ending April 30, 1918 was \$1,710,675 and the school lands fund \$497,021.37, giving a total revenue of \$2,207,696.37 from this source. This is augmented by certain direct taxation the provincial government levies for its own use, and by various commissions, duties and fees collected by the several departments in the administration of the duties

assigned to them. The Attorney-general's department during the year ending April 30, 1918, collected \$115,801.98 in succession duties, \$446,146.67 in Land Titles office fees, \$175,159.59 from the sale of law stamps, \$128,673.33 in sheriff's fees and \$101,190.92 under the Liquor License Act.

The Education Department collects fees for teachers' certificates and for certain examinations. The Agriculture Department adds to the revenue through its brand fees, game licenses, and registration of live stock. License fees from owners of motor vehicles and from persons conducting various lines of business over which government supervision is more or less necessary swell the fund considerably. Motor license fees yielded over \$600,000, while the humble marriage license fee was responsible for a contribution of nearly \$10,000 to the provincial treasury in a single year. Guilty offenders against the laws of the province who were so fortunate as to escape with the imposition of fines made amends by such payments to the extent of nearly \$100,000 during the year,—a slight consolation at any rate to an outraged country. Direct taxation of the railways and corporations operating within the province and which for obvious reasons could not be looked after by individual municipalities, is provided for in "The Corporations Taxation Act" and "The Railways Taxation Act." The revenue from this source exceeded \$300,000 in 1917.

The levies made by the province directly on the land are embodied in the following acts; (1) The Supplementary Revenue Act, 1917, provides for a tax of one cent per acre, the proceeds of which are to be used for the support of educational institutions. (2) The Wild Lands Tax Act, 1917, aimed to strike at the absent land owner or land speculator, provides for a tax of one per cent of the assessed value of lands so held. The proceeds of this tax form part of the consolidated fund of the province and are used for general revenue purposes. (3) The Public Revenues Act, 1917, provides for a tax of one cent per acre, the proceeds of which are to be used for the support of Red Cross and patriotic organizations. The estimated revenue from these sources for 1918 were respectively \$750,000, \$500,000 and \$1,000,000.

Municipalities raise their money by direct taxation. Each has its assessor whose duty it is to prepare an annual statement showing all lands within the boundaries of the municipality together with the owners' names thereof, to set a valuation on such lands and on the buildings and improvements thereon, and to prepare a roll of the adult population of the municipality showing the value of the personal property and the amount of income of each. A tax is then levied to meet the estimated requirements of the ensuing year. The systems adopted vary somewhat but the usual method is to levy the tax against the full value of the land and to exempt certain percentages of all other assessments. Provision is made on the one hand for appeals from the rolls of the assessor and on the other for the collection of arrears of taxes. Drastic methods of collection are resorted to when payment of taxes is unduly neglected. The Rural Municipality Act was amended in 1916 to allow of wider concessions by way of exemption from taxation of the soldier's home, the Arrears of Taxes Act being modified accordingly. The Village Act was also altered to provide that the home of the soldier, or the home of his wife, in any village is totally exempt from taxation during the period of his enlistment.

Several communities on the frontiers of the province where settlement is gradually directing its onward course, have been organized as Local Improvement Districts. The rate of taxation in each of these was, up to the end of last year, one and one-quarter cents per acre, excepting in the case of leaseholders who were required to pay only three-quarters of a cent per acre. Taxes in these unorganized districts are levied by the Department of Municipal Affairs to which they are payable. The amounts secured are disbursed for road and similar improvements throughout the communities concerned.

The fixing of assessment valuations has been a difficult task. During boom days widely speculative values were attached by promoters to urban lots and these fictitious values were often adopted by the assessor, with the result that the taxes imposed against such lots became over burdensome. On the other hand the assessed values of rural properties has generally been very moderate. The rural districts have also avoided the undertaking of expensive improvements such as have caused the embarrassment of a number of urban centres that were unduly anxious to make rapid development and now find themselves carrying heavy loads. The burden of taxes may then be generally considered most moderate in rural districts and the smaller urban centres. Those large municipalities that have undertaken excessive improvements find taxes fairly heavy at present owing to the temporary distress caused by the war, but with an influx of population following the signing of peace, conditions may be expected to speedily improve. The percentage of municipalities in actual financial difficulty is less than three quarters of one per cent while many rural ones closed their books last year showing cash surpluses of over ten thousand dollars each.

The general prosperity of the province may be expected to speedily bring about satisfactory conditions to all her cities and towns as their adversities were caused by extravagance in days of over-optimism and not through any fault of the country. They have learned lessons which will not be easily forgotten and which may be the means of preventing future disasters. The Town Planning and Rural Development Act recently passed by the legislature is a progressive step looking to the future welfare of the municipalities of the province. A director of town planning will be associated with the Department of Municipal Affairs, whose duty it will be to assist in the preparation of by-laws and plans for the encouragement of growth along proper aesthetic and health-ensuring lines. A marked tendency on the part of the larger towns and cities to curtail their expenditures and borrowings as far as possible consistent with the upkeep requirements indicates an attitude of more sound management and civic economy. An era of extravagance could not be without its aftermath but the crisis is now well past and all indications point to a healthful and substantial development in the coming years.

The Public Debt

The Federal Government in creating the province of Saskatchewan in 1905 appointed a number of officials to form a provisional government and assume the affairs of the newly created province. This Government was immediately confronted with the necessity of providing public buildings for administrative purposes and of meeting other demands which required the expenditure

of large sums of money. The population of the province doubled within a few years following this date thus necessitating the expenditure of large initial sums of money in public improvements such as bridges, highways and ferries, in public buildings including the Parliament buildings, the land titles offices, court houses, jails, hospitals, and schools of the country. These undertakings being of a permanent nature have had their cost arranged to be spread over a number of years. As the ordinary revenue of the province was not sufficient to meet these heavy initial charges, the moneys required were provided out of borrowed funds obtained by selling government securities. Their cost was charged to capital account, which very largely comprises the public debt. Debenture loans floated from time to time add to the public debt while the redemption of the maturing ones decreases it.

From the capital account certain expenditures are made in the nature of investments, for instance, funds for the Saskatchewan Provincial Telephone System were provided from this source and such funds deducted from the gross public debt show the net public debt of the province. The assets of the province include the aforementioned investments and all moneys, lands or other securities held by the province. The balance sheet for the year ended April 30, 1918, shows total assets of \$53,444,165.99, and total liabilities of \$29,645,836.62 or a balance of assets over liabilities of \$23,798,329.42. This does not take into account the value of school lands held in trust for the province by the Dominion Government of which a conservative estimate would be \$40,000,000. A statement of revenue and expenditure for the same year shows a total revenue of \$8,278,465.34 and a total expenditure of \$6,884,534.87. The condition of the country's finances, therefore, appears quite solid and it compares very favourably with that of any other province of the Dominion.

Government Agencies

It has been mentioned that the Federal Government still exercises control over the natural resources of the province. All vacant Crown lands, including homestead lands, are administered by the Department of the Interior. Timber, grazing, and mineral lands are also administered by this Department. The fisheries are under the control of the Fisheries Branch of the Department of Naval Service while the welfare of the forest lands generally is looked after by the Forestry Branch of the Department of the Interior. To facilitate the transaction of official business the province has been divided into Dominion Land Districts which are in charge of local agents. Business in connection with homesteads, grazing leases, timber permits or licenses, and the recording of mineral claims may be dealt with directly at the office of the agent in whose district the lands affected are situated. The office of the District Inspector for the Forestry Branch is located at Prince Albert. The chief inspector of fisheries for the province of Saskatchewan has his office at Indian Head while his two district inspectors for Northern and Southern Saskatchewan respectively are located at Prince Albert and Indian Head. The Dominion Land Districts are shown in the following table:—

DOMINION Land Districts

District	Office at
Moosejaw Land District.....	Moosejaw
Swift Current Land District.....	Swift Current
Saskatoon Land District.....	Saskatoon
Prince Albert Land District.....	Prince Albert
Battleford Land District.....	Battleford
*Edmonton Land District.....	Edmonton

*On account of the natural facilities for travelling to and from the north-westerly part of the province making Edmonton a more accessible point than any town or city in Saskatchewan a certain area in this section has been thrown into the Edmonton Land District.

Matters of registration are administered by the Provincial Government. When a homesteader completes his duties and receives his patent from Ottawa, he receives from the Crown their right and title to the land affected and it then automatically goes under the control of Provincial legislation. The province has been divided into the following Land Titles or Registration Districts:—

LAND Registration Districts

District	Office at
Moosomin.....	Moosomin
Assiniboia.....	Regina
Cannington.....	Arcola
Moosejaw.....	Moosejaw
Yorkton.....	Yorkton
Saskatoon.....	Saskatoon
West Saskatchewan.....	Battleford
East Saskatchewan.....	Prince Albert
Humboldt.....	Humboldt
Swift Current.....	Swift Current

Judicature

The Supreme Court of Saskatchewan consists of a Chief Justice and six judges. This court has all the powers of the Supreme Court of the former Northwest Territories, which itself combined the functions of all the courts of England. The province is divided into seventeen districts, each having a district court, judge, registrar, deputy registrar, sheriff and deputy sheriff. The jurisdiction in civil matters is similar to that of county judges in the older provinces. In addition, the district judges exercise certain criminal jurisdiction under the Criminal Code. The rules of procedure in the district courts are, generally speaking, similar to those of the Supreme Court. There is also the Surrogate Court, governing all matters connected with the probate of wills. An appeal lies from the Surrogate judge to the Supreme Court of the province. Under the local statutes, all police magistrates in incorporated towns and cities are appointed by the Governor-in-Council. Each of these has the jurisdiction of two justices of the peace.

The Federal Parliament in 1875 established the Supreme Court of Canada and later the Exchequer Court of Canada. The Supreme Court of Canada has appellate jurisdiction from all the courts of the provinces. The Governor-General in Council may refer questions to this court. The judgment of the Supreme Court is final in criminal matters. This court has also jurisdiction in cases of controversies between the provinces and the Dominion, and in certain cases between the provinces themselves. There is an appeal from the Supreme Court in civil cases, under certain limitations, to the Privy Council in England. The Privy Council also entertains appeals direct from the provincial Appeal Courts without the intervention of the Supreme Court of Canada. The decisions of the Supreme Court of England form a mass of most valuable and important declarations of law as to the constitution of Canada and as to the varied powers of the Federal and provincial legislatures.

The following table contains a list of the seventeen judicial districts of the province.

JUDICIAL DISTRICTS

Prince Albert,
Moosomin,
Saskatoon,
Yorkton,
Cannington,
Battleford,
Moosejaw,
Regina,
Weyburn,

Swift Current,
Humboldt,
Kerrobert,
Kindersley,
Wynyard,
Estevan,
Scott,
Melville.

Naturalization

Any alien desiring naturalization may apply to the Secretary of State of Canada for a certificate provided that he can comply with certain conditions; namely, he must have a residence of five years in Canada or a British possession; of which at least one must have been actually spent in Canada—all this within the last eight years before his application. Any person receiving this certificate shall be entitled to all the political and other rights, powers and privileges of a British subject, and be subject to all obligations, duties and liabilities of the same. The Secretary of State may include in the certificate the names of all the children of the applicant who are minors. The applicant who is a resident of Saskatchewan should apply to the Supreme Court or the district court of the district in which he is situated. The clerk shall post up his application for a specified time and then report the application to the Secretary of State, who issues the certificate if satisfied as to the circumstances.

Franchise

In Saskatchewan there is now universal suffrage. Every male and female who is of the age of twenty-one years and a British subject is entitled to vote, provided he or she has resided for twelve months in the province and three months in the electoral district, prior to the date of the closing of the registration of votes.

The vote in municipal elections is restricted in certain instances to the actual holders of property within such municipality. Saskatchewan has opened the doors of her legislature to women, though as yet, none have offered themselves as candidates for such legislative honours.

TRANSPORTATION AND COMMUNICATIONS

Canada has been styled "a land of waterways" and in the days of early explorations when the canoe was the chief medium of travel, Saskatchewan, with her far-flung river system was able to live up to this description. As the expansion of trade and the development of the country's resources have gradually forced the canoe to give way to boats of commerce, and the winding portages have been replaced by canals and locks, this province has been forced to drop out of the race. True her waterways are of considerable magnitude and may yet be utilized to a greater extent than at present but without vast expenditures on various works necessary for the operation of large craft commercial navigation is impossible. The expenses involved in such undertakings and the long distances that would have to be traversed before reaching the main bodies of water on which Canada's mercantile fleets ply are drawbacks which will likely prove permanent obstructions to such projects. Aside from Alberta, Saskatchewan is the only province of Canada which does not border to a greater or lesser extent on salt water. The St. Lawrence river and the Great Lakes system give to Quebec and Ontario an additional wonderful advantage in water routes. The Maritime Provinces have the Gulf of St. Lawrence and the Atlantic ocean partly surrounding them. Manitoba has outlets on Hudson Bay while British Columbia borders on the great Pacific. The two most westerly prairie provinces are the only "inland" provinces of Canada and of these Alberta boasts of an extended steamboat route on the Peace, Athabaska and Slave rivers. Saskatchewan's main avenues of transportation therefore must be of the "overland" variety.

Roads and Trails

The densely wooded nature of those parts of Canada first explored by the white man no doubt accounted for his travelling by water. The native Indian cut out no trails through the bush that he could possibly do without and built no roads whatever. Hence we find all our earliest settlements clustered along the water's edge within reach of the supplies and protection that the boats guaranteed. One outstanding feature of the hardships suffered by the pioneers who penetrated into the depths of the Canadian forests was the difficulty of travel. The "corduroy" roads of the bush country will never be forgotten. They form a part of the history of the settlement of all such districts and traces of them may be found to-day in many places throughout the oldest parts of Canada. The same methods are still being employed as the outer reaches of forest lands are being brought under cultivation.

The prairies of Saskatchewan swept away in one stroke all such hardships from the eyes of the astounded pioneer, as the rising sun dispels the mist of early morning. No longer must he grope his way through the depths of the mysterious forests in hourly dread of ambush by hostile Indians or sudden attacks by hidden wild beasts. No more must his snail-like pace be halted

by barriers of impassable tree trunks or checked by oozing swamps that demanded days of laborious toil in constructing roads over which to pass his little procession of wordly goods. There lay the way before him, open and clear. Did he wish to pursue his onward course the ground beneath was firm and smooth for his cart wheels, nature laid her offerings of fodder at his horses' feet all along the way, and like the sailor, he had but to set his compass and glide away. Did he wish to pitch his tent and make his home here he had but to put his plough to the ground and break the mellow furrow. Little wonder that the wheat field of Saskatchewan has spread like a prairie fire till it now exceeds all such areas in any part of the world.

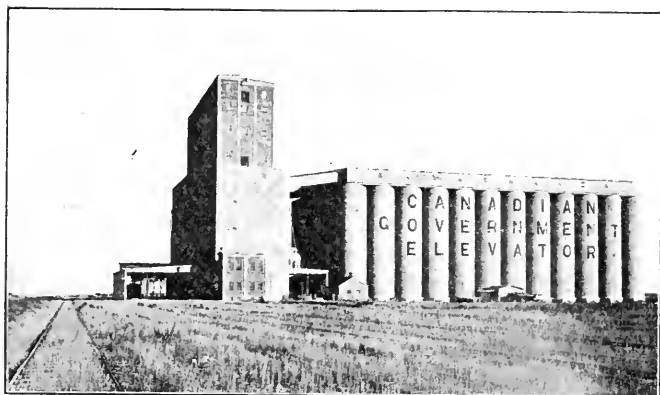
In 1754 Anthony Hendry was despatched from York Factory on Hudson Bay by the Hudson's Bay Company to make explorations into the western interior, the land of the Assinibois. Travelling by canoe up the Hayes and Saskatchewan rivers he reached the broad prairies of this province and spent a winter with the Indians. Returning the following year with an account of his travels he reported having seen Indians travelling and hunting on horseback and was laughed to scorn. The idea of Indians on horseback! Impossible, these pompous traders thought. His reports of the prairies were probably discredited to a like degree. This represents the general belief or disbelief of the old world in 1755 regarding the middle west. With what marvellous rapidity it has come to its own is one of the most interesting chapters of Canadian history.

The wandering herds of countless thousands of majestic buffalo have left a net-work of trails deeply indented in the prairies. These trails have been followed by the Indian hunter on his fleet pony, by his squaw with the primitive travoise and by Indian and early white settler with the historic Red River cart till they became established routes of travel. The rectangular system of survey and the fencing in and ploughing up of the land by the ever-spreading tide of settlers have gradually obliterated these early trails but happily for the romance of the early days a few were permitted to remain and have been surveyed and established as permanent highways. Such historic ways as the "Fort Qu'Appelle and Duck Lake Trail" or the "Battleford and Fort Edmonton trail" could not be permitted to pass into oblivion without a distinct loss to the province. Traces of countless camp fires all along these routes stand as fading monuments to the passing of the red man and the coming of the white, to the eternal vigilance of the "riders of the plains" and the intrepid courage of the expeditionary force that quelled the rebellion of 1885, to the devotedness of the pioneer missionary and to the zeal of later arrivals, whose numbers overflowed the accommodation available along these routes and forced them, like their forerunners to camp beneath the stars.

The construction and maintenance of highways is in charge of a special department of the Provincial Government. Roads, bridges and ferries are provided to meet the requirements of the various outlying districts as rapidly as they are settled, while improvements are constantly being carried on in the older settled parts of the province. As an evidence of the extent and satisfactory condition of the system of highways extending throughout the province one has only to observe the great number of automobiles seen on the roads everywhere or parked in any town or village on a market day. Over forty

thousand licenses were issued in the province during 1918, principally to rural owners. Incredible as it may seem in this number are included many names of homesteaders. How the sturdy pioneers of Eastern Canada and the New England States would have marvelled could they but have caught a glimpse of such conditions as these. Homesteading by motor car is an innovation not uncommon in Saskatchewan but rarely permitted elsewhere in the world.

The advantages of "good roads" are now realized in earnest and everywhere in Canada strenuous efforts are being made to improve rural conditions. Saskatchewan is fully alive to the importance of such works and is keeping pace with the other provinces. She has the natural advantage of an open and level country, free from rocks and easy to grade and drain. Gravel and sand are widely distributed and much glacial drift is found which is admirably suited for road material. The success of the farm is enhanced by the ease of reaching the markets and the pleasures are multiplied by the splendid roads extending in every direction giving outlets for pleasure drives by motor car or horses wherever desired. The county roads of the province are not being neglected.



Canadian Government Elevator, Saskatoon.

Railways

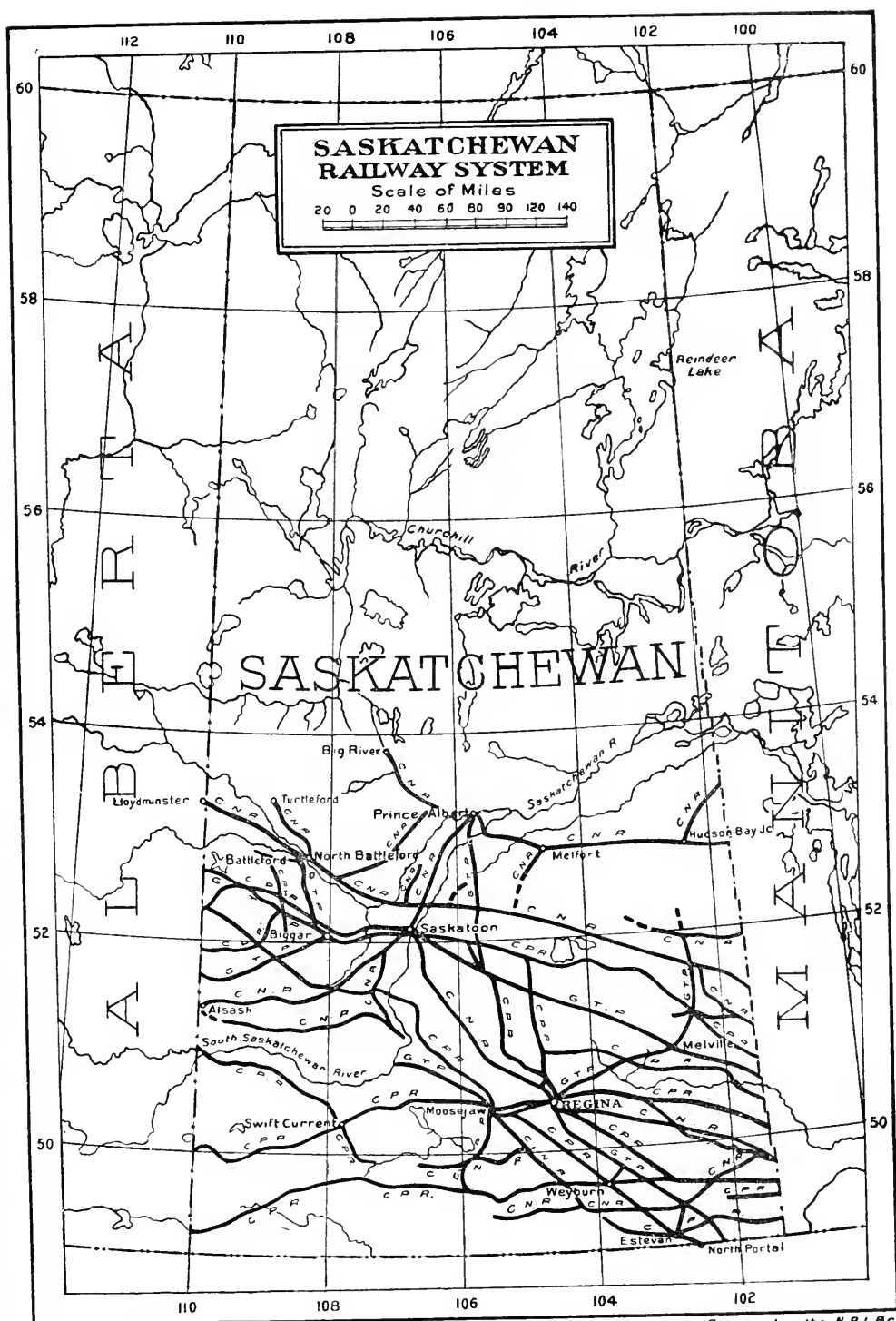
In railway service the province has been singularly fortunate. As the prairies made easy the acquiring of roads and trails so the position of the province with respect to the rest of Canada has solved her railway problems to a major extent. When British Columbia joined the Dominion in 1871 it was stipulated that a railway to connect her with the older provinces should be immediately constructed. Hence the Canadian Pacific Railway was built and as the prairies of Saskatchewan lay directly in its path they found themselves shortly after the rebellion of 1885 penetrated by a line of steel which served to further encourage the large number of settlers attracted to these districts by the publicity given them by this uprising. This line was well in advance of settlement, the population of the Northwest Territories at the time of the Saskatchewan rebellion being very meagre. It kept well to the south, though the original location aimed to follow the great fertile Saskatchewan valley farther north.

This was accomplished by a second transcontinental railway some twenty years later, namely the Canadian Northern Railway, now a part of the Canadian National Railways. When the province was inaugurated in 1905 it found itself in possession of two lines of railway traversing its most valuable farming sections from east to west and already throwing out branch lines and feeders. Incidentally it also found itself encumbered by extensive grants of land to both companies.

Still another great transcontinental railway was to stretch its long lines of steel across the province, paralleling the former lines but lying far enough between them to afford service to an area beyond the economic reach of either, namely, the Grand Trunk Pacific Railway. Thus lying in the path of these three great transcontinental systems the province has been supplied with a framework of railways from which feeders may easily reach every part. Expansion has been very rapid until the last few years, when, owing to the great war, all railway construction in Canada had to be curtailed. The east and west lines have been more than duplicated while a decided growth in a general north and south direction has been prosecuted, with Regina, Saskatoon and Prince Albert as the main points en route. The Canadian Pacific Railway early secured a southern outlet to Minneapolis and St. Paul while the Canadian Northern pushed branches northward to connect with the Hudson Bay project at The Pas and north of the Saskatchewan River to Big River and the Turtleford District.

At the inception of the province in 1905 the Canadian Pacific had 1,090 miles within its borders and the Canadian Northern had 462, a total of 1,552 miles. The Grand Trunk Pacific was then not started. In 1917, twelve years later, the Canadian Pacific had 2,779 miles of road, the Canadian Northern 2,206 and the Grand Trunk Pacific 1,164, a total of 6,149 miles, or an increase of about 400 per cent.

This is indeed a remarkable showing and now that conditions may be expected to become normal it is certain that further extensions will be prosecuted. As the older sections of the province become more densely settled and the acreages under crop are increased additional branch lines and feeders will become necessary to adequately meet increased requirements. The opening up of coal and clay areas will also make additional railway service necessary. The Canadian Northern, having recently been taken over by the Dominion Government may be expected to be extended in harmony with the Grand Trunk Pacific and Hudson Bay sections. It is impossible to suggest what additions will be made as no announcements have yet been made public by either the Government or the Canadian Pacific Railway Company as to their intentions in this respect, but among other improvements a more direct connection between such great wheat centres as Saskatoon and Regina and the Hudson Bay route could be carried out to advantage. A line northeasterly from Prince Albert to tap the great forest and agricultural areas about Candle and Cumberland lakes, the water-powers of the Sturgeon-weir river, the gold and copper fields of Amisk Lake and Northern Manitoba and connecting easterly with the Hudson Bay section would no doubt open up vast resources. The Big River branch might well be extended northerly to Beaver river and even to Ile à la Crosse to tap the great fisheries resources of these inland waters. The Turtleford Branch



from Battleford might be swung westerly to traverse the great agricultural district lying between the Beaver and Saskatchewan rivers, and if extended as far as Edmonton would serve a district in Alberta already settled but in dire need of a railway to save it from disaster.

The interests of the province in these connections is looked after by a Department of Railways which has given encouragement and substantial assistance in the guarantee of bonds and otherwise to various branch lines built within her limits. In addition to the three main railway companies mentioned there are subsidiary companies of two of them by which their branch lines are operated, namely, the Canadian Northern Saskatchewan Railway Company, the Grand Trunk Pacific Branch Lines Company and the Grand Trunk Pacific Saskatchewan Railway Company.

The following table gives a summary of the track and station situation existing in the province in 1917.

*SASKATCHEWAN Railway Situation, 1917.

Railway	Miles Track	Depots	Loading Plat- forms	Ele- vators	Ware- houses	Freight Sheds	Stock Yards
Canadian Pacific railway....	2,779	348	357	1,008	.....	276	217
Canadian Northern railway.	2,206	182	301	688	19	61	175
Grand Trunk Pacific railway	1,164	137	189	296	89	13	74
Total.....	6,149	667	847	1,992	108	350	466

*Department of Railways, Saskatchewan.

The express business of the province is fully provided for by three great Canadian companies whose operations cover all lines of steel. They are the Canadian, Canadian Northern and Dominion Express Companies respectively.

Electric Street Railways

Three cities of Saskatchewan have already been provided with electric street railways, namely, Regina, Saskatoon and Moosejaw. Regina had the honour to commence operations, putting a municipally owned system into harness in July of 1911. Moosejaw followed rapidly with a privately owned company starting to run cars in September of the same year. Saskatoon, like Regina, decided on a municipal system, which commenced operating in January of 1913. The equipment and service of these railways is of a high standard and has been of inestimable value to the cities served in stimulating their growth. They have all been successfully operated during the dull years of the war and may be expected to expand to meet the renewed growth of these urban centres which will doubtless rapidly follow the signing of peace. Further particulars are shown on the following table.

*SASKATCHEWAN Street Railways, 1917

Particulars of System	Regina Municipal Railway	Saskatoon Municipal Railway	Moosejaw Electric Railway Company
Commencement of operations.....	July 29, 1911	Jan. 1, 1913	Sept. 4, 1911
Miles of line.....	34.27	16.28	12 (approx.)
Average number of employees.....	114	85	63
Passengers carried.....	5,112,460	3,910,101	2,294,698
Passenger cars.....	34	18	21
Freight cars.....	29		
Work cars.....	1	4	1
Snow-ploughs.....	1	1	1
Sweepers.....	2	1	

*Department of Railways, Saskatchewan.

Waterways

The waterways of Saskatchewan, though mentioned as being of little commercial importance in comparison with those of most of the other provinces, are nevertheless worthy of attention. The historic interest attached to them is most interesting. The earliest explorers to reach the prairies came by canoe. La Vérendrye with his three sons and a nephew blazed the way during the years 1731 to 1748 and traversed the Qu'Appelle, Souris and Saskatchewan rivers. De Niverville ascended the Saskatchewan in 1751 as far as the Rocky Mountains. Anthony Hendry also crossed the province by way of the Saskatchewan in 1754.

The rapidly expanding fur trade soon created scenes of activity along the many water routes now embraced within the limits of the province and made famous by two centuries of use. The Assiniboine, Qu'Appelle and Souris with Manitoba's famous Red river were for long years the highways of commerce and discovery for the bold adventurers of New France who came by way of Lake Superior, or the haughty traders of the Hudson's Bay Company striking in from York Factory, both anxious to outdo the other in securing the pelts of the prairies or gaining a foothold in the valley of the Missouri. The mighty Saskatchewan, most famous of all, and which gives its name to this province, is the outstanding river of the prairies of Canada. Two main branches, the north and the south, whose tenacles of origin constitute the entire drainage of three hundred miles of the eastern slope of the Rocky mountains, unite below Prince Albert and pour into Lake Winnipeg the surplus waters from the vast valleys whose fertility has been instrumental in making the province all that it is today.

For long years the Canadian Pacific was the only railway of Western Canada and as it crossed the southern parts of the prairies the great Saskatchewan became the highway of commerce for the north. Flat-bottomed, stern-wheeled river boats plied regularly the waters of the main branch from Grand rapids at Lake Winnipeg to Prince Albert, Battleford, Fort Pitt (now in ruins) and even up to Edmonton in the adjoining province of Alberta. The south branch was also navigated past the present city of Saskatoon, around the "big bend" and up to the forks of the Red river at the western boundary of the province, and some-

times beyond as far as Medicine Hat. Like the historic boats of the Mississippi the boats of the Saskatchewan have almost disappeared as the more speedy overland routes have encroached on their territory. The Battle, Carrot and Torch rivers are tributaries found within this province now chiefly used in rafting logs to the mills.

Another famous waterway is the Churchill, whose headquarters are found in this province. Colossal fortunes are represented in the furs that were transported by this route. The Athabaska brigades, paddling up the Clearwater and packing their burdens across the "long portage" found themselves ready to follow this famous route, commencing just within the present bounds of the province of Saskatchewan. This is decidedly a picturesque way. Unlike the Saskatchewan, which retains its symmetry almost all along its route, the Churchill is more in the nature of a series of crystal lakes, nestled among hills of granite, dotted with myriads of beautiful islands and connected by short stretches of river proper. These usually contain rapids and falls which compel the voyageur to portage his canoe and forbid the passage at any hazard of power boats. In place of the meadows and fertile valleys of the Saskatchewan are found low swamps of spruce and tamarack, or rugged hills of upheaved rocks, partly bare and partly wooded with groves of jackpine or clusters of gay birch.

Before reaching the eastern limit of the province an alternative route is found, which the early traders usually made use of. Leaving the Churchill at Frog portage the way lay nearly south, following a chain of lakes leading to the Sturgeon-weir river, thence by way of Amisk, Namew and Cumberland lakes to join the Saskatchewan. This diversion brought the French traders to their posts at The Pas and allowed the English to reach tide water at York Factory by way of Hayes river, their principal route.

The main tributary of the Churchill above Frog portage is the Beaver river, a swift flowing stream heading near Lac la Biche and flowing through a valley rich in timber and grazing lands. A short distance below the portage Reindeer river enters the Churchill, flowing southerly from the great lake whose name it bears.

The far northern waters of the province offer the adventurer an interesting route leading from Reindeer lake on the east to Athabaska lake on the west by way of Wollaston, Hatchet and Black lakes, Black river and Fond du Lac. The Cree river enters Black lake from the south while to the north a canoe route, broken by numerous portages, leads to the haunt of the Eskimo in the great silent "barren lands." If not of great commercial importance these northern water routes nevertheless offer unparalleled attractions to the lover of the great lone land who seeks an opportunity to enjoy an outing far from the nerve-racking worries of his every-day duties.

For a new province Saskatchewan is singularly fortunate in its many mediums of communications. Its six thousand miles of railways, its far-flung waterways and complete system of rural roads give opportunities for travel and intercourse far beyond those of most new districts. The Dominion government maintains the mail service which is kept up to a high standard. In territorial days a telegraph service had also been provided by the same source, which has been continued and considerably extended. Telegraph lines also follow the rails in usual fashion. The provincial government has established a most

thorough telephone system which is growing by leaps and bounds and promises soon to be available for every rural home except the most outlying. Even the most remote stragglers are kept in touch with, through the patrols of the police, forest fire rangers, or other officials. The regular physical features of the lower part of the province, its uniform surface of level, fertile land, and the evenly distributed settlement spreading over all prevents the isolation of any section in the great agricultural areas. Its seven cities are widely separated and these augmented by some seventy-five towns and over three hundred villages scattered over the province give an urban centre with all its advantages within easy reach of every rural quarter.

Telephones

The telephone situation in Saskatchewan is quite unique. It is under the control of a special department of the local government whose powers were delegated it by "The Railway and Telephone Department Act of Saskatchewan." A novel form of compromise is practised by which the government owns and controls the long distance lines and controls and supervises all other lines. It is a combination of government and private ownership all under the guidance of the telephone department, the urban and long distance systems belonging to the government owned class, and the rural systems to the privately owned class, with a very few exceptions. The legislation in this respect was introduced in 1908 and has been improved upon from time to time till now it is generally conceded that the province has the most satisfactory and complete grasp of the telephone situation exercised in Canada.

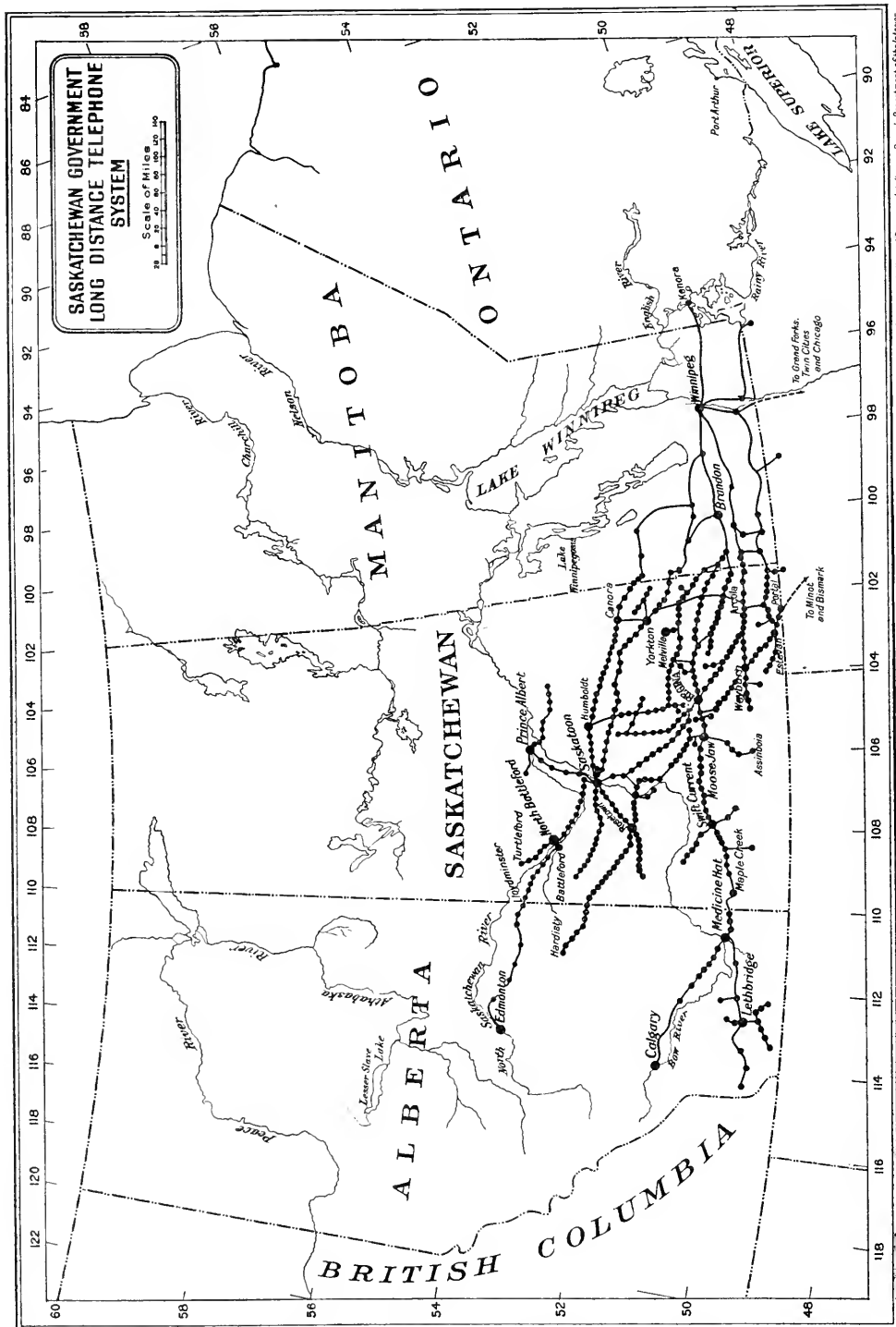
In the early years of operation the following systems had been purchased and taken over by the government:

TELEPHONES—Purchases by Government

System Bought	Date	Price	Subscribers
		\$	
Bell System.....	1907	367,500	2,100
Saskatchewan Telephone Company.....	1909	150,000	1,011
Wapella-Harris System.....	1909	1,200	34
North Western Telephone Company.....	1911	70,000	925
Saltcoats Telephone Company.....	1911	3,000	53
Swift Current Plant.....	1911	22,500	293
Yorkton, N. W. Electric System.....	1912	3,600	188
Total.....		617,800	4,604

The Balcarres Municipal System, the Lumsden Radial System, and the Montmartre and Simpson private systems have since been acquired.

Starting with this purchased nucleus the government adopted a vigorous policy of extension and enlargement which has been carried out from year to year resulting in a network of lines and offices which embraces the whole of the settled parts of the province, giving service to all the principal urban centres and supplying connections to hundreds of rural systems. The steady increase of



the population, both over additional area and in density on old areas, creates a steady demand for new lines and enlargements and improvements of existing ones, which during the period of war, taxed the construction branch of the Department to its utmost. It is hoped now that conditions are becoming more normal that the work can be kept well in hand. Some idea of the progress of extension of the system will be obtained by reference to the following tables:

*GROWTH of Saskatchewan's Telephone System

Year	Pole Miles Long Distance	Wire Miles Long Distance	Exchanges	Toll Offices
1910.....	1,132	3,280	20	100
1911.....	1,647	4,404	33	143
1912.....	2,163.22	8,171	70	195
1913.....	3,172.17	11,857.8	93	280
1914.....	3,388.17	13,714	96	298
1915.....	3,622.77	15,760	99	311
1916.....	3,622.12	16,114.3	103	317
1917.....	4,274.99	18,833.40	150	320
1918.....	4,383.64	20,152.30	222	353

*Department of Telephones, Saskatchewan.

*TABLE Showing Purchases and Constructions by Province, April 30, 1918

Part of System	Purchased	Constructed	Total
Pole Miles.....	492.20	3,891.44	4,383.64
Wire miles.....	1,562.00	18,590.30	20,152.30
Exchanges.....	26	196	222
Toll offices.....	54	299	353

*Department of Telephones, Saskatchewan, 1919.

The only points reached outside the province when the government took up the project were Manitoba and North Dakota. The system has now been extended to reach Western Ontario, Manitoba, Alberta, Montana, North Dakota, South Dakota, Minnesota, Wisconsin and Illinois. The telephone map on another page shows the extent of the government system.

The outstanding feature of Saskatchewan's way of dealing with the telephone question and wherein it differs from a straight government owned venture, is the manner in which the rural telephones are handled. In a purely agricultural country, forging ahead with astounding strides, the providing of the country homes with telephone service becomes of vital importance. Saskatchewan has introduced a method which is meeting with marked success by which the government provides and owns a network of long distance lines and exchanges and permits the connection thereto of various local rural systems, organized, constructed and operated under government supervision.

Rural telephone companies may be organized by the farmers of the district to be served for their own benefit and are not allowed to furnish service to residents of towns or villages. These companies are governed by the provisions of "The Rural Telephone Act" and are subject to the regulations of the Department of Telephones. The organization of a company must be in accordance with these provisions and regulations. Advice and assistance in these preliminary steps are provided by officials of the government and when the organization meets with their approval a certificate of incorporation is issued. An issue of debentures may then be proceeded with. The debentures are limited to 15 years and the interest thereon is not to exceed 8 per cent. The provisional officers of a company are to consist of five *bona fide* farmers of the district, one of whom acts as chairman, and a secretary-treasurer. Any interested person may subscribe for shares but only *bona fide* farmers are eligible to be directors. All lands adjacent to the lines constructed and subject to municipal taxation are made assessable for a telephone levy, and all residents on such lands are to be given an opportunity to become shareholders, or to receive service at any later date on application in writing. An initial amount of \$5 per mile of line proposed must be collected to defray organization expenses. The capitalization of a company is not to exceed \$10 per mile for each mile it is proposed to build. Shares are fixed at \$5 each and no subscriber may subscribe for more than four shares.

The department requires that all rural lines be built to a standard in accordance with their specifications, and until they have been passed by an inspector of the department and accepted as satisfactory, connection with the government exchanges on long distance will not be granted. A metallic circuit is required and not more than ten instruments are allowed on one circuit. It has been found that those companies whose systems do not exceed four or five circuits obtain the most satisfactory results in maintenance, operation and service. A company is allowed connection with one town or market place only and is required to provide for the future development of the district it purports to serve.

The advantages of this rural system are legion. Communities bound together by peculiar ties of interest or location are permitted to obtain local systems under their own management. The supervision and assistance of the government guarantees a uniform service, highest efficiency and minimum cost. Classes of instruction on the maintenance of these lines are held every winter by the Department free of charge, for the benefit of residents of each district having a rural system, and have been largely attended by farmers or their sons. Thus each district has a trouble-man in its midst and is enabled to effect repairs at a minimum of cost. This co-operative system between the various rural companies on one hand and the government on the other has proved most satisfactory and is rapidly spreading to all farming sections of the province. Up to April 30 of 1918 some 958 rural companies were operating such telephone systems and applications for the organization of over twenty additional companies were pending. At this date the number of subscribers had reached 35,555.

The following table compiled from the Report of the Telephone Department of April 30, 1918, shows the growth of the system to that date:

TELEPHONES OF SASKATCHEWAN, April 30, 1918

I. *Government Systems*

Exchanges.....	222
Toll offices.....	353
Stations.....	24,690
Long distance lines, pole miles.....	4,383.64
Long distance lines, wire miles.....	20,152.30

II. *Rural Systems*

Number of Companies.....	958
Capital or Debenture issued.....	\$7,989,400
Stations.....	35,555
Rural lines, pole miles.....	34,516
Rural lines, wire miles.....	111,193

III. *Other Systems*

Independent Rural Systems.....	3
Independent Town Systems.....	28
Municipal Systems.....	4
Lines, pole miles.....	115
Stations.....	1,415

Stations

Total number of stations giving service in the Province....	61,660
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Telegraphs

The telegraph facilities of the province are in keeping with the general advancement of its utilities. Generally speaking it may be said that the railway situation represents that of the telegraph, the steel being followed by the wires everywhere. The Canadian Pacific Railway Company own and operate their own telegraphs and every railway station is also a telegraph office. In case of flag stations or small stations where an operator is not employed connection by telephone is invariably available to the nearest operating point. In spite of the high cost of material during the years of war this company strung an extra wire of copper from Montreal to Vancouver, crossing this province en-route. The Great Northwestern Telegraph Company has served the Canadian Northern lines in a similar manner. The railway and operating wires have recently been taken over by the Dominion government. The Grand Trunk Pacific Telegraph Company operate wires along the lines of the Grand Trunk Pacific Railway. All these three companies maintain down town offices in the cities in addition to those in the railway depots.

There are also a number of telegraph lines totalling over one thousand miles which have been built and operated by the Department of Public Works of the Dominion government for the benefit of remote sections. The construction of the oldest of these dates back to 1883 when a line was extended from Qu'Appelle to Onion Lake and thence carried west to Edmonton. This

line has a military record to add interest to its history, the wires having been cut by the rebel Indians during the uprising of 1885. The Battleford-Ile à la Crosse line constructed in 1912 has the distinction of tapping the far northerly wilds of the Churchill and keeping the fur-trader in touch with civilization.

The following table contains statistics of interest in this connection:

CANADIAN GOVERNMENT TELEGRAPHS

LINES built and operated in Saskatchewan by the Department of Public Works, Ottawa

Lines Constructed	Year	Miles Wire	Offices
Qu'Appelle—Onion Lake.....	1883	402	9
Moosejaw—Wood Mountain.....	1885	107	4
Wood Mountain—Willow Bunch.....	1904	39	2
Gravelbourg Loup.....	1910	38	1
Leeville Loop.....	1912	28	1
Saskatoon Loop.....	1892	28	1
Duck Lake—Batoche.....	1902-10	9	2
Duck Lake—Indian Agency.....	1902	3.5	3
Lloydminster Loop.....	1904-09	58	1
Lipton Loop.....	1906	2	1
Fort Qu'Appelle—File Hills Agency.....	1907	28	4
Kamsack—Indian Agency.....	1907	6.5	2
Kamsack—Indian Agency—Pelly.....	1910	17.5	4
Battleford—Ile a la Crosse.....	1912	275	6
Meota Loop.....	1912	20	1
Sintaluta—Assiniboia Reserve.....	1913	8	1
Total.....		1,069.5	43

TELEGRAPHS OF SASKATCHEWAN

Companies	Miles Wire	Offices
Canadian Government.....	1,069.5	43
Canadian Pacific Railway Co.....	1,681.0	270
Great Northwestern Telegraph Co.....	4,347.0	188
Grand Trunk Pacific Telegraph Co.....	4,208.0	64
Canadian National Railways.....	3,001.0	Service in connection with railway operations.
Total.....	14,306.5	

Mail and Aerial Navigation

The postal service is administered by the federal government and is maintained in a high state of efficiency. Its expansion follows closely upon the opening up of all new districts. The number of post offices in Saskatchewan according to the Postal Guide of 1918 was 1,530. The cities of Regina, Saskatoon

and Moosejaw have postal deliveries and collections. Some 70 rural routes have been established and mail is now being delivered to 2,100 rural boxes along these courses. During the period of the war the expansion of the rural delivery system was not pressed, but with the return of normal conditions this service will be rapidly extended. A free daily mail service at the farmer's gateway is an advantage of primary importance. The only cost to the recipient is the price of the mail box.

Now that the war is over and steps are being taken to direct to commercial channels of activity the army of highly trained air pilots with their modern planes of speed it is reasonable to expect that Saskatchewan will witness some of the earliest undertakings in this connection. The level expansive prairies and clear skies of the southern part and the chain of lakes with equally clear skies extending over the northern sections should make ideal conditions for the operation of both air and sea planes. The Dominion government is already giving some attention to the matter and the advantages of a private service by air has already been recognized by the officials of one of the great fur trading companies of the north who are looking into the matter seriously.

EDUCATION AND RELIGION

Under the provisions of the British North America Act the Legislature of each province in Canada exercises exclusive control of educational matters within its own boundary. The Saskatchewan government has a department of education of which the premier himself is at present the active head assisted by a superintendent, a deputy minister, an educational council, and a large staff of prominent educationalists.

The educational system of the province is most thorough and comprehensive. It is headed by a provincial University, and from this distinguished seat of learning to the most humble rural public school, provisions for the dissemination of knowledge are most complete.

The Act establishing the University of Saskatchewan was passed on the third of April, 1907. It provided for a Convocation consisting of all graduates of any University in His Majesty's Dominions who were actually residing in the Province for three months prior to the first meeting and who applied for registration. Four hundred and thirteen names were placed upon the register.

At the first meeting of Convocation, held on the sixteenth of October, 1907, the Honourable Edward Ludlow Wetmore, Chief Justice of the Province, was unanimously chosen Chancellor, and twelve members of the Senate were elected. The Senate held its first meeting on the eighth of January, 1908, when appointments to the Board of Governors were made, and the policy of the University was discussed. The Board of Governors appointed a President in the following August, and immediately approached the difficult problems of selecting a site and determining the relation of the University to the proposed College of Agriculture. After a careful inquiry, it was unanimously decided by the Senate and the Governors to make provision within the University for instruction in Agri-

culture. This decision was cordially approved by the Lieutenant-Governor in Council and the Legislature. When this question had been settled, the Governors selected a site for the University at Saskatoon.

Temporary quarters were secured and classes in Arts and Science were opened September 28, 1909, seventy students registering. In the same year the College of Agriculture was organized. The following year the educational work of the Provincial Department of Agriculture was transferred to the University.

The corner stone of the first building was laid by Sir Wilfred Laurier on July 29, 1910, and the buildings were opened for the admission of students in October, 1912. The College of Agriculture was opened for students October, 1912; the School of Engineering October, 1912; the College of Law, September, 1913; and the School of Pharmacy January, 1914.

The University of Oxford has admitted the University of Saskatchewan to the privileges granted to Colonial Universities by the Statute of Affiliation. The University granted affiliation to the following provincial institutions; Emmanuel College, St. Chad's College, the Presbyterian College, the Normal Schools, the Collegiate Institutes and High Schools, the Institute of Chartered Accountants, the Pharmaceutical Association, the Association of Architects, the Dental Council, the Association of Registered Nurses, and the Veterinary Association.

Emmanuel College was established at Prince Albert by the first Bishop of the Diocese of Saskatchewan, the Right Rev. John MacLean, in 1879, as a training college for native helpers. When the University was placed at Saskatoon in 1909 the College was moved to a site near the University. New buildings were erected on the University grounds in 1912. The Presbyterian Synod by Act of a general Assembly in 1912 established a Theological College in affiliation with the University and began its erection in 1913.

There are two Provincial Normal Schools, the first of which was established at Regina in 1893, and the second at Saskatoon in 1912. The Collegiate Institutes and High Schools were instituted under the Secondary Education Act of 1907. While a larger staff and better equipment is required for the Collegiates the course of study and the provincial examinations are the same for both. In 1918 there were six Collegiate Institutes and fifteen High Schools.

The revenue of the University is derived from one-third of the Succession Duties, ten per cent of the Supplementary Revenue Fund, one quarter of the Corporation Tax, the Legislative Grant, one-third of the Dominion grant in aid of Agriculture, fees, gifts, and the sale of the produce of the farm. The University is an integral part of the Provincial System of Education. The Collegiate Institutes and High Schools prepare students for the Junior and Senior Matriculation as well as for Teachers' Certificates. The Matriculation and Teachers' Examinations held by the Department of Education in July are accepted by the University as equivalent to its examinations held in September.

The University embraces:

1. The College of Arts and Science, including Schools of Pharmacy and Accounting, offering,
 - (a) Courses in Arts and Science leading to the B.A. and B.Sc. Degrees.
 - (b) Partial Courses intended for those who cannot take a full course.

(c) Courses in Pharmacy, one leading to the B.S.P. Degree, and one to the License in Pharmacy.

(d) Course in Accounting leading to the Degree of B. Acc.

2. The College of Agriculture, offering,—

(a) The course leading to B.S.A. Degree.

(b) The Associate Course in Agriculture.

(c) The Extension Work.

(d) The Demonstration Work on the College Farm.

(e) Short Courses for Farmers.

3. The College of Law, offering,—

(a) The Course leading the L. L. B. Degree.

4. The College of Engineering, offering,—

(a) The Course in Civil Engineering leading to the B.E. Degree.

5. The Summer School, offering,—

(a) Courses for Teachers.

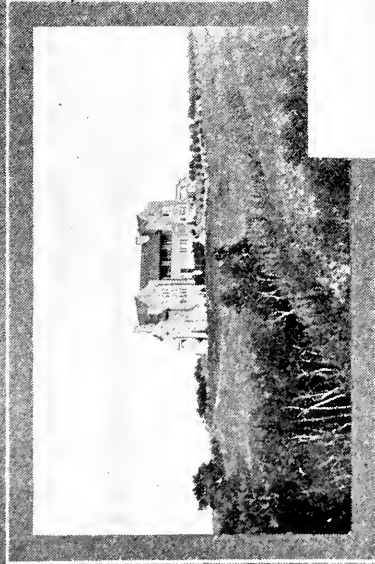
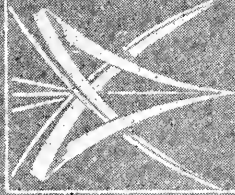
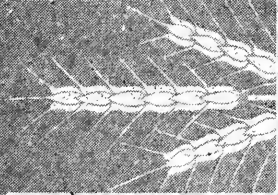
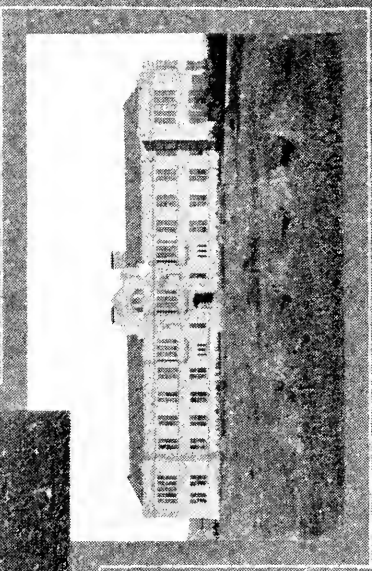
(b) Courses leading to a Degree.

The University Buildings command a very prominent site overlooking the valley of the South Saskatchewan, and the city of Saskatoon. They are built of stone which was obtained in the vicinity and which is believed to be drift from the Silurian limestone formations of Cumberland Lake district. The foundations of a library and museum have been laid with a valuable collection of some 16,000 scientific and historical volumes and museum specimens.

A varied list of scholarships, prizes, and medals are available in the various departments. These include among others one Rhodes Scholarship, and the Governor-General's gold medal annually. The University Act gives the University full power and authority to grant such degrees in the several faculties and different branches of knowledge as the Senate may from time to time determine. The Act reserves for the University the sole right to confer degrees in this province, except in Theology. A statute provides for the admission *ad eundem gradum* of graduates of recognized universities holding one or more of the degrees mentioned above.

At the inauguration of the province on September 1, 1905, the Educational Institution consisted of a Normal School at Regina and some 894 public school districts. The increase has been most phenomenal. The report of the Department of Education shows the total number of school districts in existence on December 31, 1916, to be 3,878, showing an increase of almost 3,000 in a period of eleven years or an average of 270 annually. This is a record that cannot be beaten by any other province of Canada or any state in the adjoining republic. The province started out with no Collegiate Institutes or High Schools. At the close of the year 1916 it boasted of 7 of the former and 14 of the latter with an enrolment of 3,849 pupils under the instruction of 138 teachers.

The Saskatchewan Act passed by the Parliament of Canada in 1905 to create the province provides for the organization of separate school districts for Protestants or Roman Catholics. This provision in the Provincial Constitution contained a privilege that had been in force from the earliest territorial days. The fears that it might be taken advantage of to such an extent as



Saskatchewan University Buildings, Saskatoon.

to unnecessarily multiply separate school districts to the disadvantage of public schools have proven groundless. At inauguration September 1, 1905, there were 894 school districts and nine separate school districts. At the end of 1916, the public school districts had increased to 3,859 but the separate school districts only amounted to 19, of which 16 are Roman Catholic and 3 Protestant. The number of pupils enrolled in all elementary schools in 1916 was 125,000, with 5,677 teachers.

The Superintendent of Education exercises the general supervision and direction of high schools and collegiate institutes, model schools, public and separate schools, training schools for teachers, the granting of teachers' certificates, technical schools, departmental examinations, teachers' institutes, teachers' reading courses, school libraries and the inspectors of any such schools. The Educational Council, consisting of five members appointed by the Lieutenant-Governor, holds sessions at least once a year, and all general regulations respecting the inspection of schools, the examination, training, licensing and grading of teachers' courses of study, teachers' institutes, and text and reference books, before being adopted or amended, are referred to the Council for consideration and report.

Elementary Schools are supported partly by taxes levied by the municipalities concerned, and partly by grants paid to the Government in accordance with the School Grants Act. Funds for high schools are raised by the municipalities concerned and are assisted by the government grants payable on the conditions prescribed by the Secondary Education Act. As a further source of revenue to both public and high schools, grants are paid from the supplementary revenue fund in accordance with the provisions of the Supplementary Revenue Act.

The School Act provides for the establishment of schools wherever necessary, and any portion of the province with an area not exceeding twenty square miles may be organized into a school district, provided there are residing therein ten children of school age, and four persons, each of whom on its organization is liable to be assessed for school purposes. These schools are under the control of local bodies of trustees chosen on a popular vote. The appointment of teachers is in the hands of the trustees, but the Education Department issues the certificates of qualification.

Provision was made in 1913 for the establishment of consolidated districts containing from thirty-six to fifty square miles for the purpose of conveying pupils to a central school. There are now some sixteen consolidated schools in operation. In addition to the usual school grant the Government pays an additional grant of one-third of the actual cost of conveyance. In case a small district is unable to raise sufficient taxes by reason of its limited area to operate a school, or has insufficient school population, the resident children may be conveyed to a neighbouring school at the expense of the district. In this case also the Government pays one-third of the cost of conveyance.

Where an unorganized area is settled by families with children of school age, the Minister may order the establishment of such area into a school district. This action is necessary only in foreign-speaking settlements where the settlers are not sufficiently acquainted with the English language to conduct organization proceedings.

The two normal schools located at Regina and Saskatoon are devoted to the provisional training of teachers. In addition, local sessions of the normal school for the training of teachers for elementary schools are held during the winter months at several points in the province and are conducted by the inspectors of schools. Normal school training is considered of supreme importance, and permanent certificates are issued only to those who have received professional training in the training schools of the province or upon satisfactory evidence of equivalent training elsewhere. A reading course for teachers is regarded as part of the professional training, and permanent certificates are not issued until the regulations governing the course are complied with.

The average annual salaries of teachers in Saskatchewan for the year 1915 are shown in the following statement:

SASKATCHEWAN, Salary of Teachers, 1915

Schools	Qualifications	Male	Female
Rural.....	First Class...	\$ 832	\$797
	Second Class..	813	779
	Third Class...	785	749
	Provisional....	779	742
Cities, towns, and villages.....	First Class...	1,298	873
	Second Class..	1,015	800
	Third Class...	849	737
	Provisional....	825	764

The task of the Department of Education in providing school accommodation to keep pace with the rapid settlement of the province has been enormous. In 1901 the population was 91,279; in 1906, the year following the inauguration of the province, the population had increased to 257,763. During the next five years it almost doubled, being given as 492,432 in the census of 1911, while the Quinquennial Census of the prairie provinces in 1916 places the figure at 647,835. Had these new-comers all spoken the English tongue the matter of providing educational facilities for the children would still have been a momentous task. As great percentages of them were from European countries the difficulties of the educationalist were thereby multiplied. As will be seen by reference to the following table a conglomeration of mother tongues was spread throughout the settlements. Not only were many of the foreigners unable to speak our language but they were illiterate as far as their own was concerned. The government was alert to recognize that in order that these new citizens might assimilate to the best advantage the children must be educated in the uniform language of our Dominion. English has, therefore, been designated as the one and only language of the public schools, with slight modifications in exceptional instances respecting French. The showing of the schools of Saskatchewan today are a credit to those in charge of this work. The following table shows the origins of the people of the province by percentages according to the census of 1916.

*SASKATCHEWAN—Origins of People, 1916

Origin	Percentage
British (races).....	54.5
English.....	26.6
Irish.....	12.7
Scotch.....	14.6
Welsh.....	0.6
French.....	4.9
German.....	11.9
Belgian.....	0.4
Austro-Hungarian.....	9.1
Danish.....	0.5
Dutch.....	1.4
Icelandic.....	0.5
Indian.....	1.1
Italian.....	0.1
Jewish.....	0.6
Norwegian.....	4.2
Polish, n.o.s.....	1.0
Russian.....	4.1
Swedish.....	2.5
Ukranian.....	0.7
Others.....	1.5
Total.....	100.00%

*Census of Prairie Provinces, 1916

*SASKATCHEWAN—showing Percentage of Inhabitants of Foreign Origins Ten Years of Age or Over unable to speak English, 1916

Origins	Percentage
German.....	13.4
Austro-Hungarian.....	33.8
Belgium.....	10.7
Danish.....	1.1
Dutch.....	2.9
Icelandic.....	4.5
Italian.....	9.8
Jewish.....	3.5
Norwegian.....	2.0
Polish.....	26.2
Russian.....	28.2
Swedish.....	3.0
Ukranian.....	55.8

*Census of Prairie Provinces, 1916

The education of the Indian population is principally in the hands of the Church of England and the Roman Catholic Church, being combined to a more or less intimate degree with their missionary activities. Other churches have also contributed to some extent in this work but the two mentioned have for many years carried on a campaign of religious and educational activity

among the red men of the west. The schools on Indian reserves are assisted financially by the Department of Indian Affairs at Ottawa, which also provide the reserves with agents and instructors to teach and assist the natives in bettering their own conditions by such industries as farming and stock raising. On nearly all the principal reserves are found such religious and industrial institutions. In the far north the Roman Catholic church has a most complete establishment at Lac la Plonge, consisting of church, school, hospital and residence buildings, a modern saw mill and an up-to-date farm. A large church and school are also located at Ile à la Crosse, with various smaller churches scattered throughout the adjacent districts where visiting officials hold sessions of two or three weeks duration from time to time.

The Church of England maintains a similar institution on Lac la Ronge. A very picturesque and striking edifice is the English Church at Stanley. Built on a rocky point projecting out from the north bank of the Churchill river, it commands a sweeping view of this water, while the rocky pine-covered hills behind form a pleasing background to its tall lone steeple. The windows consist entirely of stained glass, every pane of which was imported from England and transported with considerable difficulty over the tedious canoe route from York Factory. The interior woodwork, pews and fittings were also imported while the outer boards and shingles were sawn by hand from native timber by the Indians themselves.

The Indian industrial school at Duck Lake is a most thorough institution and native children from considerable distances attend. Both Anglican and Roman Catholic missions are found on the Onion lake reserve, also a well equipped government agency, while some form of church, school or other agency for the uplift of the native is to be found almost everywhere a band of these exists.

The adult Indian displays a marked interest in religious ceremonies and is a persistent church goer. The children also prove apt scholars, but it is evident that both religious and educational impressions are often only transient and when the fancy passes the lapse into former conditions is rapid and generally lasting. Great credit is due these earnest workers, in both church and school, and on the farm, who strive for the uplift of the primitive race in the face of considerable odds.

To get the foreign element to realize the importance of education is a tremendous task. Many of the lower class of Europeans brought to the province are content to neglect such matters and allow their children to grow up illiterate. A widely distributed system of public schools, free but compulsory, where the English language is the medium of instruction, is the remedy. The aggressiveness of the school policy along these lines is the assurance of its ultimate success in producing an enlightened class of people equal to the best of any rural district. Taken all in all there is no other province in Canada that offers better educational facilities or a broader system of education.

Religion

Religious denominations are widely represented, which is only to be expected considering the various sources of the cosmopolitan population now located

in the province. Freedom of worship has permitted all creeds to thrive and almost every known form of worship under the sun exists here. According to the census of 1916 the various principal Protestant religions predominate with a Roman Catholic census almost equal to the highest single Protestant denomination. The Presbyterians head the list with a majority of about seven thousand over the Roman Catholics who are second. The Methodists take third place with the Anglicans a close fourth and the Lutherans well up in fifth place. These constitute nearly five sixths of the entire population. Of the remainder the Greek Church, Baptists and Mennonites come in the order named.

The executive divisions of the Presbyterian and Methodist churches make of the province in each case an individual field, namely the Synod of Saskatchewan and the Conference of Saskatchewan respectively. The Anglican churches of the province are included in the Ecclesiastical province of Rupert's Land and the Roman Catholic churches in the Archdiocese of Regina.

In the principal cities and towns of the province some very fine edifices are to be seen while throughout the rural districts the number and excellence of the church buildings is a pleasant surprise to the traveller. As far as external indications suggest the spiritual welfare of the people is in no more danger of suffering neglect than the intellectual. In the following table will be found a summary of the religious standing of the province according to the census of 1916.

*SASKATCHEWAN—Religions of People, 1916

Religion	No.
Presbyterians.....	129,019
Roman Catholics.....	122,242
Methodists.....	98,365
Anglicans.....	97,916
Lutherans.....	81,098
Greek Church.....	33,702
Baptists.....	22,813
Mennonites.....	18,934
†Miscellaneous.....	8,219
Protestants.....	7,157
Doukhobors.....	5,880
No religion.....	5,134
Jews.....	3,990
Christians.....	2,566
Congregationalists.....	2,483
Adventists.....	2,100
Pagans.....	1,634
Evangelicals.....	1,245
Mormons.....	1,174
Undenominationalists.....	1,087
Salvation Army.....	1,077
Total.....	647,835

*Census of Prairie Provinces, 1916

†Miscellaneous includes all religions less than 1,000

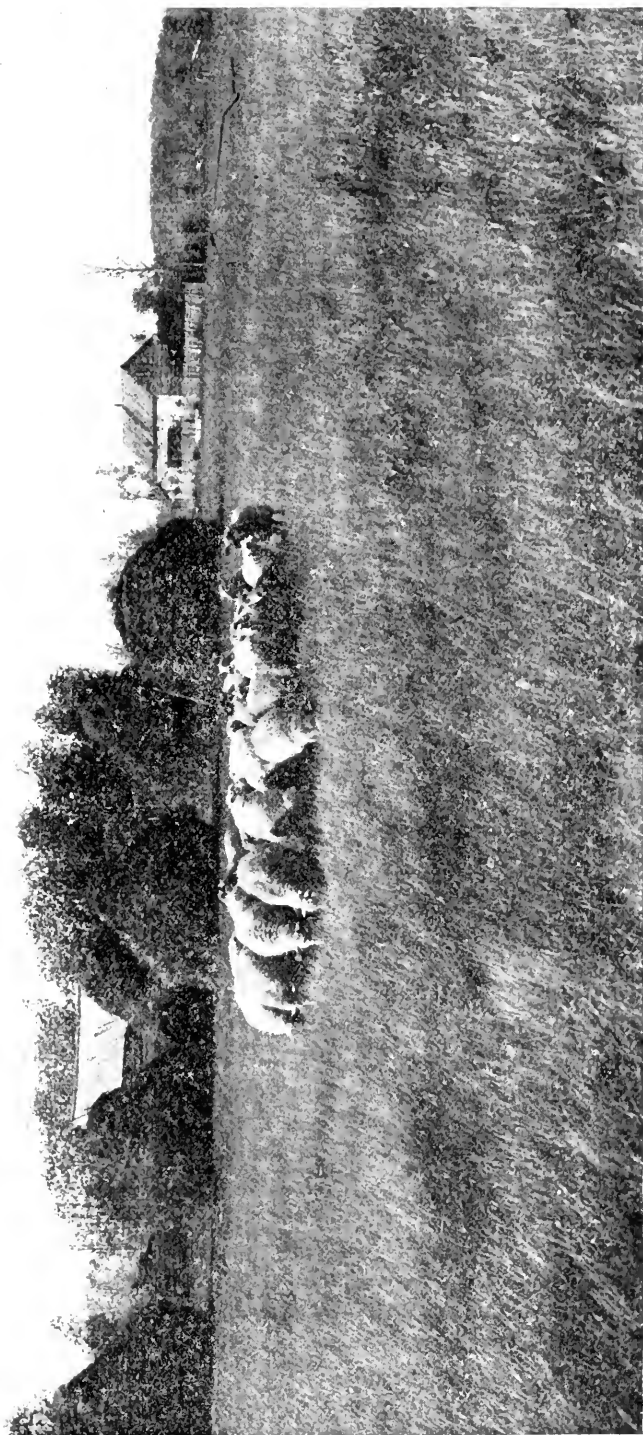
CLIMATE

The climate of Saskatchewan is rapidly becoming recognized as one of the province's most valuable assets. Not only is it healthful and invigorating but its conditions are such as tend to stimulate the agricultural possibilities of the land, especially in respect to wheat growing. These statements may appear, to those who have not given the matter careful attention, rather startling, since the general reports of earlier days spread a rather gloomy picture of climatic conditions throughout the whole of Western Canada. Such traditional misconceptions are by no means uncommon. Earliest explorers in Canada carried back to Europe most harrowing tales of the severity of the climate of the St. Lawrence valley. The regions including the present cities of Montreal and Quebec were pictured in Arctic phrases and for long years the future of Canada was prophesied to be exceedingly uninviting because of her severe climate. Fur traders and others interested in keeping vast areas reserved for the purpose of furthering their own selfish gains took no pains to correct such misbeliefs, but rather corroborated them. Thus it is that a campaign of education is necessary to inculcate the truth regarding such matters. Manitoba was at first condemned as unsuitable for the growing of grain of any description. Today her wheat belt is steadily enlarging. Saskatchewan has undergone a somewhat similar experience.

True the winters are cold. No one attempts to deny this. But is this a detriment? Aside from short spells of extra severity, or a few blizzards,—and what country has not its off days and storms,—the winters are indeed delightful. Under foot the ground is frozen hard and dry and the lakes and streams are covered with a safe sheeting of ice. The snow is dry and powdery,—fleecey as down,—and the fall is exceedingly light. The air is clear and crisp,—the sky usually perfectly free from clouds. By day the sunshine spreads a brilliant glow over the sky and land, and though its heat is small, it dispels all damp and gloom from the atmosphere, making the air exceedingly dry and light. By night the silvery moon-beams, the twinkling stars and the ever-shifting "Northern Lights" shed through the motionless air and over the carpet of snow an enchanting enticement that calls one out of doors in spite of the fact that the thermometer may be doing its best to terrify one into remaining by the fireside.

This clear, dry, crisp, motionless cold is not the cold of a damp, dull, seaside winter with its slush and mud underfoot, or its deep snow, heavy atmosphere and lowering sky. At twenty-five degrees below zero children romp and play out of doors entirely unconscious of the cold. Men will tell you that at forty-five below they experience less difficulty in keeping warm than at zero in other countries. The dry clear cold of the western provinces is peculiar to them and a source of wonder and delightful surprise to new-comers. The fears of encountering a whole winter of climatic severity may therefore be lightly dismissed and replaced by a picture of real enjoyment. As to the short spells of excessive cold which must be expected, or occasional blizzards, due provision should be made to cope with them if it is found necessary to be out of doors, and to keep the home well warmed within.

The summers are characterized by high day temperatures and an abundance of sunshine. The heat is not oppressive; the dryness of the air is most marked



A typical Saskatchewan Homestead.

and the nights are cool. Sultry, murky days are almost unknown. The northern latitudes and expansive prairies give a long period of daylight. In fact the nights during the summer months are merely short periods of twilight. The skies appear high and the air exceedingly bright. This is not a mere imagination but is most noticeable in photographic work. Very rapid exposures of plates and films may be made on summer days on the prairies. The average sunshine is nearly nine hours a day during the summer months.

Temperature

The mean temperature of the province for the year is 36 degrees Fahrenheit. During the growing season it is about 55 degrees. The mean annual precipitation is only about 16.75 inches. This is nearly all in rain however, the snowfall being very light. It also occurs mainly during the growing months of May, June and July, when it is most needed by the crops. As a rule it proves sufficient for their needs when careful methods of farming are followed. It is, however, too low for sure crop production, with average careless methods of soil cultivation; hence dry farming methods are found to be necessary in order to secure the best results. A certain amount of hail is annually precipitated in varying districts. The amount varies from year to year. Some sections appear to be more liable to receive it than others, but its times and places of appearance as well as its severity are quite uncertain. The percentage of damage it does to growing crops, taking the province as a whole, is small, though often very severe locally. For this reason, the provincial hail insurance scheme is in operation. Severe wind and electric storms are very rare. Only one hurricane of any account has ever visited the province and its scope was limited to a small area. Thus taken the year around the climate is more pleasant and healthful than that of most countries of the world.

Temperatures throughout the province differ but little from the mean at any given time and rise or fall with fairly uniform variations. Lower temperatures in the more northerly latitudes are offset to a certain extent by the shelter derived from the woods and the modifying effects of large bodies of water. The uniform altitude of the prairies bears an important relation in this respect. The altitude of the second prairie steppe, which comprises the greater part of the province, is 1,600 feet on an average. That of the third prairie steppe, embracing the westerly part of the province and extending to the Rocky Mountains, is about 3,000 feet.

A very noticeable feature of the climate is the rapidity with which winter gives way to spring or even summer weather. A sudden rising of the temperature, with bright sun and soft breezes, and in an incredibly short time the light mantle of snow has disappeared. Without waiting for the frost "to come out of the ground" the waters from the melted snow disappear, the ground surface dries up as fast as it thaws out and in a few days the dust is flying again. Seeding operations soon follow and the transition has taken place usually without the proverbial "March winds and April showers" and all their discomforts. As a rule the snow disappears during March or very early in April. Seeding operations usually commence about the first week of April. During the past ten years the average date of the commencement of seeding operations was April 8th and the average date at which seeding operations were general was April 18th. Harvest begins early in August and is usually well under way by

the middle of that month. Early frosts and fall weather may be looked for in September. The most pleasant months of the year, however, are usually September and October. Wintry weather is due any time after the first of November though open falls till the first of December are not uncommon. Thus it will be seen that the summers on the prairie are unusually long and the winters, though cold, are shorter and brighter than those of eastern districts with more moderate temperatures.

In a recent publication entitled "The Resources of Manitoba and Their Development", the author, Professor R. C. Wallace of the University of Manitoba, draws attention to the relation existing between climate and human energy. The effects of climate on the human temperament are psychological as well as physiological, and for that reason difficult to appreciate fully by scientific methods. A beginning has however been made in the work of reducing to an exact science the influence of the weather on human energy, both physical and intellectual. The results of these investigations prove conclusively that the climate of a country is a controlling factor in the industrial activity and even in the intellectual status of its people. In summing up a review of the various climates of the world that of Western Canada is found to occupy a most favourable position with respect to its influence on human energy. A noted investigator of this subject is Ellsworth Huntington, whose findings are made public in his book on "Civilization and Climate". He has prepared a map of the world showing the regions of "very high", "high", "medium", "low", and "very low", human energy on the basis of climate. The southern part of the province of Saskatchewan lies well within the "very high" energy belt. It is thus evident that the climatic conditions of the province are favourable for its successful expansion in the many sided phases of national completeness.

The dates of the opening and closing of the Saskatchewan river at Prince Albert for a number of years are shown on a table following. Another table gives the temperature, precipitation, hail and frost at representative points in Saskatchewan for April, May, June, July, August and September in 1916.

*Dates of opening and closing Saskatchewan river at Prince Albert

Year	Date opened		Date closed	
1899	April	26	December	1
1900	"	12	November	10
1901	"	21	"	10
1902	"	18	"	9
1903	"	25	"	16
1904	"	21	"	20
1905	"	7	"	27
1906	"	14	"	16
1907	May	11	"	14
1908	April	21	"	5
1909	May	8	"	12
1910	April	1	"	7
1911	"	18	"	7
1912	"	15	December	2
1913	"	15	November	15
1914	"	19	"	16
1915	"	9	"	12
1916	"	19	"	14
1917	"	30	December	1
1918	"	10	November	21

*T. E. Parker, Prince Albert, Sask.

*Temperature, Precipitation, Hail and Frost, 1916.

—		Sas- katoon.	Prince Albert.	Battle- ford.	Swift Current.	Regina.	Kam- sack.
Elevation in feet.....		1,571.	1,414.	1,622.	2,432.	1,885.	1,445.
APRIL	Temperature in degrees Fahr—						
	High st.....	74.	75.	76.	80.	72.	71.
	Lowest.....	14.	2.	15.	18.	2.	-1.
	Mean.....	38.	38.	40.	41.	36.	35.
	Difference from average...	+1.	+1.	+2.	+0.	-1.	.....
	Precipitation in inches—						
	Total.....	0.64	1.21	0.73	0.62	0.56	0.15
	Difference from average...	+0.27	+0.38	+0.32	-0.13	-0.17	.....
	Sunshine in hours—						
	Total number.....	204.	.....	.....	197.	.....	.....
	Possible number.....	417.	.....	418.	413.	.....	.....
	Number of days of hail.....	0.	1.	0.	0.	0.	0.
	Number of days below 32°....	19.	19.	12.	23.	20.	21.
MAY.	Temperature in degrees Fahr—						
	Highest.....	78.	78.	77.	79.	77.	75.
	Lowest.....	19.	20.	21.	23.	20.	24.
	Mean.....	47.	48.	48.	48.	48.	47.
	Difference from average...	-3.	-1.	-4.	-3.	-2.	.....
	Precipitation in inches—						
	Total.....	2.45	4.38	2.77	1.59	1.89	2.21
	Difference from average...	+0.86	+2.84	+1.08	-0.53	-0.09	.....
	Sunshine in hours—						
	Total number.....	198.	.....	.....	210.	.....	.....
	Possible number.....	48.	.....	88.	478.	.....	.....
	Number of days of hail.....	0.	0.	0.	0.	0.	0.
	Number of days below 32°....	7.	3.	8.	9.	8.	9.
JUNE	Temperature in degrees Fahr—						
	Highest.....	78.	77.	78.	79.	79.	77.
	Lowest.....	32.	30.	32.	28.	35.	28.
	Mean.....	56.	56.	57.	56.	55.	54.
	Difference from average...	-2.	-1.	-2.	-4.	-4.	.....
	Precipitation in inches—						
	Total.....	1.68	2.60	3.66	4.05	4.28	2.29
	Difference from average...	-0.83	-0.03	+0.19	+1.00	+1.11	.....
	Sunshine in hours—						
	Total number.....	250.	.....	.....	230.	.....	.....
	Possible number.....	498.	.....	501.	488.	.....	.....
	Number of days of hail.....	0.	0.	0.	1.	0.	0.
	Number of days below 32°....	1.	1.	1.	1.	0.	2.

*Compiled from information furnished by the Meteorological Service of Canada.

Temperature, Precipitation, Hail and Frost, 1916—Continued.

—		Sas- katoon.	Prince Albert.	Battle- ford.	Swift Current.	Regina.	Kam- sack.
JULY	Temperature in degrees Fahr—						
	Highest.....	90.	86.	89.	91.	89.	87.
	Lowest.....	48.	46.	47.	44.	42.	38.
	Mean.....	66.	66.	66.	67.	68.	67.
	Difference from average...	+ 3.	+ 4.	+ 2.	+ 1.	+ 4.	.....
	Precipitation in inches—						
	Total.....	4.79	3.88	2.11	5.2	5.02	1.13
	Difference from average...	+ 2.25	+ 1.46	0.00	+ 2.78	+ 2.53	.....
	Sunshine in hours—						
	Total number.....	304.	.....	.....	335.	.....	.....
	Possible number.....	502.	.....	503.	491.	.....	.....
AUGUST	Number of days of hail.....	0.	0.	0.	0.	0.	0.
	Number of days below 32°....	0.	0.	0.	0.	0.	0.
	Temperature in degrees Fahr—						
	Highest.....	83.	85.	84.	88.	7.	95.
	Lowest.....	37.	30.	34.	32.	34.	24.
	Mean.....	59.	60.	60.	61.	61.	59.
	Difference from average...	- 1.	+ 1.	- 2.	- 3.	0.	.....
	Precipitation in inches—						
	Total.....	1.99	1.66	4.70	2.54	0.69	0.58
	Difference from average...	- 0.18	- 0.87	+ 2.72	+ 0.65	- 1.17	.....
SEPTEMBER	Sunshine in hours—						
	Total number.....	288.	.....	.....	302.	.....	.....
	Possible number.....	52.	.....	45.	446.	.....	.....
	Number of days of hail.....	1.	1.	0.	1.	0.	0.
	Number of days below 32°....	0.	1.	0.	1.	0.	4.
	Temperature in degrees Fahr—						
	Highest.....	78.	80.	81.	81.	80.	0.
	Lowest.....	24.	26.	23.	5.	26.	19.
	Mean.....	49.	51.	52.	53.	50.	47.
	Difference from average...	- 1.	+ 2.	0.	0.	- 1.	.....
	Precipitation in inches—						
	Total.....	1.3	1.00	1.05	1.46	4.14	3.21
	Difference from average...	- 0.0	- 0.44	- 0.21	+ 0.13	+ 2.95	.....
	Sunshine in hours—						
	Total number.....	178.	.....	.....	165.	.....	.....
	Possible number.....	378.	.....	378.	377.	.....	.....
	Number of days of hail.....	0.	0.	0.	1.	0.	0.
	Number of days below 32°....	11.	7.	3.	1.	8.	12.

The following table shows the highest, lowest and mean temperatures at the stations mentioned in the preceding table for each of the remaining six months of the year 1916, namely the colder months of January, February, March, October, November and December; also the precipitation. Temperatures are in degrees Fahrenheit and the precipitation, which would be chiefly snow during these months, is shown in inches of rain. In this connection one inch of rain is considered the equivalent of ten inches of snow.

***Temperature and Percipitation 1916.**

		Sask- atoon	Prince Albert	Battle- ford	Swift Current	Regina	Kam- sack
	Elevation in feet.....	1,571	1,414	1,632	2,432	1,885	1,445
January	Temp. Highest.....	17	17	20	27	13	27
	Lowest.....	-51	-58	-61	-49	-53	-56
	Mean.....	-16	-15	-16	-12	-15	-23
	Precipitation.....	0.55	0.96	0.76	2.70	1.15	0.20
February	Temp. Highest.....	44	55	50	48	40	34
	Lowest.....	-32	-42	-33	-28	-31	-38
	Mean.....	4	6	8	10	1	-2
	Precipitation.....	0.15	0.06	0.02	1.02	0.75	0.10
March	Temp. Highest.....	43	50	48	56	38	.....
	Lowest.....	-28	-32	-30	-26	-33	.....
	Mean.....	11	15	15	24	12	.....
	Precipitation.....	0.70	0.98	1.00	1.88	2.08	.....
October	Temp. Highest.....	66	64	71	75	74	67
	Lowest.....	10	11	21	12	4	10
	Mean.....	36	36	40	39	36	33
	Precipitation.....	0.92	1.88	0.71	1.11	1.85	1.01
November	Temp. Highest.....	57	58	61	61	59	44
	Lowest.....	-2	-4	0	-13	-8	-21
	Mean.....	26	25	27	28	25	19
	Precipitation.....	0.12	0.65	0	0.62	0.06	0
December	Temp. Highest.....	45	44	45	42	48	.....
	Lowest.....	-35	-32	-30	-35	-34	.....
	Mean.....	0	-1	2	-4	0	.....
	Precipitation.....	0.45	0.26	0.22	1.10	0.57	.....

*Compiled from information furnished by the Meteorological Service of Canada

SOIL

Scientific investigations of the soils of Saskatchewan have been practically confined to prairie soils, but as the prairies comprise almost the entire agricultural area of the province a very comprehensive knowledge of the subject has been attained. In general terms it may be said that the over-burden of soil is most generous and its quality amazingly fertile. Added to this is the wonderful percentage of arable land within the limits of such area,—very trivial parts being covered by water and nothing wasted by mountains—which gives one of the most extensive yet compact wheat-growing districts of the world. The soils of the prairies have been found to be peculiarly adapted to the requirements and conditions of the province and as wheat producers they are par excellent.

The agricultural belt of Saskatchewan might be said to be roughly limited on the north by the 54th parallel of latitude. Beyond this there is considerable good land but it occurs in more or less irregular areas owing to the outcropping of rock and the numerous lakes and rivers of this district. Evidence of the fertility of the soil in such areas is seen in the luxuriant gardens about the trading posts and missions of these northern parts.

The prairies may be said to extend approximately northerly to the Saskatchewan river. In the western part of the province, however, they reach slightly beyond, practically to an imaginary line drawn from Fort Pitt to Prince Albert. The Saskatchewan river might then be considered as a rough limit as far easterly as Fort à la Corne. In the eastern part of the province the wooded areas encroach south of the river to an irregular line extending from Fort à la Corne to Fort Pelly.

North of the boundary indicated irregular areas of prairie and light woods are found. The soil is on a par with that of the prairies farther south. Some wheat is grown but owing to lack of transportation, only limited quantities. The notable feature of this soil is the luxuriant growth of hay and grass it yields, which makes these sections very attractive fields for ranching purposes. Ridges of sand are found in certain areas which appear too barren for either farming or grazing. On these forests of jack-pine will grow and nearly all such areas have now been made into forest reserves so that they may not be allowed to become useless wastes. In the spruce forests there is considerable muskeg. On being cleared up and drained these muskegs make excellent soil resembling black vegetable mould, which produces very heavy growths of grains and grasses. As far north as climatic conditions will permit plant life grows profusely where its roots can obtain a foothold in soil, however scanty it may be. The fertility of these northern soils is most remarkable.

In certain small areas of the southern part of the province discouraging results were obtained in attempting to secure crops. Investigation showed that the top soil had been burned off by disastrous fires in dry seasons. However the percentage of poor or barren soils in the agricultural section of the province is practically nil while the general value is exceptionally high.

Careful studies of the soils of Western Canada have been conducted by Dr. F. T. Shutt, Dominion Chemist, during the past twenty-five years and

his conclusions regarding the fertility and productiveness of the soils of Saskatchewan's prairies are most encouraging. His reports and findings are embodied in a pamphlet entitled "Western Prairie Soils". It is from this source that most of the information here given in connection with the subject of soils is extracted.

Prairie Soils

The outstanding characteristic of the western Prairie soils is the large proportion of vegetable matter and its concomitant nitrogen they possess. It is to this fact they primarily owe their remarkable fertility and lasting quality. For the most part they contain abundant stores of the mineral elements of plant food, though in this respect they do not differ from many soils of less productiveness found in other parts of the Dominion. It is the larger percentage of nitrogen-holding, humus-forming material and its intimate incorporation with the sand and clay that give to these soils their superiority, chemically, physically and biologically.

Soils of great productiveness are characterized by large percentages of organic matter and nitrogen, while worn or partially exhausted soils, resulting from continuous grain growing or other irrational treatment, and soils from naturally poor areas, show meagre amounts of these constituents. As far as soils in humid and semi-humid districts are concerned, there exists a relationship between the organic matter and the nitrogen such that methods of culture which increase the amount of the former raise the percentage of the latter. On the other hand when the organic matter is destroyed, nitrogen is dissipated.

In humus is found nature's storehouse for nitrogen that may be readily nitrified and made available for crop use. Upon further decay of the humus valuable percentages of potash, phosphoric acid and lime are liberated so that a large part of the soil food supply of the growing crops is no doubt obtained from the humus. Of equal importance with its chemical value is its influence on the physical condition of the soil. This is most important in increasing the capacity of the soil for holding moisture. Investigations have shown that soils of the same type from adjoining areas, apparently under the same climatic conditions and with equal drainage, will retain moisture in proportion to their organic matter content. The prairie soils, during the growing season, may retain amounts of water far in excess of those present in soils less rich in organic matter though favoured with a heavier precipitation. The high absorptive capacity of these soils under suitable cultural methods allows moisture to be held over from one season to another. Thus it is possible, in districts of scanty precipitation, to secure by means of a fallow, two good crops in three years, when only meagre yields would be obtained if the land were seeded every year. Humus also contains properties which favourably modify the tillage and temperature of both clays and sands.

The growth of crops depends largely upon the rate of nitrification during their vegetative period, and while temperature and moisture largely control this process, the amount of nitrates formed must be materially affected by the quantity of the food supply the micro-organisms find in the form of partially decomposed organic matter. Of all the elements of plant food, nitrogen is the most potent in its influence on crop production. As regards prairie soils, nitrogen

may be regarded as the chief index of their fertility or the most reliable measure of their crop-producing power. This applies to both clay and sandy loams. The extraordinary growth that characterizes vegetation on the prairie as soon as the season opens is due, for the most part, to the fact that very rapid nitrification takes place in the spring and early summer months, consequent upon the large water content of the soil and the high temperatures which then prevail.

The richness of these prairie soils is due to the tremendous accumulation of nitrogenous organic matter with its associated mineral constituents, the remains of countless generations of plant life. Since the glacial period the prairies have been continuously covered with grasses and leguminous herbage. As layer upon layer of decaying forests are pressed down by succeeding growths to form beds of coal for man's use in future ages so these growths of grasses and herbs have formed a soil of remarkable depth and wonderful fertility.

This heritage of wealth is now being reaped in the form of bountiful crops. In order that it may be made a lasting resource it will be necessary to practice rational methods of farming.

Other reasons for the remarkable fertility of the soil are the favourable climatic condition of the prairies and their regular physical features. High diurnal temperatures, long days, and a sufficient rainfall during the growing season are conducive to a most luxuriant growth. Rapid nitrification and conversion of inert mineral matter into available plant food take place practically throughout the summer. The winter season, with its dry cold, then practically locks up the stores of plant food from the autumn until the season opens again. Waste from leaching, which occurs where there is an excess of rain to carry off the soluble constituents, or where the winter is mild and open, is thus prevented. The generally level character of the prairies also has precluded those losses of soil by erosion which naturally occur in more or less mountainous districts.

Particulars of the examination of twelve representative samples of Saskatchewan soils made by the Dominion chemist are quoted in the following paragraphs. In this connection he has pointed out the difficulty that has been encountered in selecting only those which were truly representative of fairly large areas, owing to the fact that the second prairie steppe, comprising the larger part of this province, is not characterized by the uniformity noticed in the Red River valley. This fact has precluded the possibility of examples of all types being found but he remarks that the larger number of soils examined, and more particularly those in the noted wheat-growing districts, have been found to be abundantly supplied with humus-forming material and nitrogen.

*SAMPLES OF SASKATCHEWAN SOILS.

No. 1. A rich, black loam from Moosomin, a point on the main line of the C.P.R., 220 miles west of Winnipeg. The elevation of this locality is in the neighbourhood of 1,800 feet, and this soil may be regarded as fairly representative of the southeastern part of the second prairie level. This true prairie soil possesses abundant stores of plant food, and is, judged by accepted standards, one of high fertility.

No. 2. From the district of Tisdale, on the Canadian Northern Railway, about 160 miles due north of Indian Head. The district is one that in a large measure is comparable to the Dauphin country, being partly wooded with scrub, poplar, etc., and therefore, unlike the true prairie requiring clearance. It is a greyish-black loam of a decidedly clayey nature. The nitrogen, on the water-free soil, is almost half of one per cent, with notable amounts of potash and lime, and an average phosphoric acid content.

*Dominion Chemist.

Nos. 3 and 4 are from Saltcoats and Yorkton, points on the northwestern branch of the C.P.R., 250 and 270 miles respectively, west of Winnipeg, and approximately 75 miles northeast of Indian Head. Their similarity and comparative contiguity render unnecessary the separate consideration of these two soils. They are black, sandy loams of the true prairie type, rich in vegetable matter and nitrogen, with excellent percentages of phosphoric acid and potash.

Nos. 5 and 6 are black loams of a markedly sandy character, taken from areas that had been under grain (without manure) for a period of about fifteen years. Wolsely, the place of collection, is about 20 miles east of Indian Head on the C.P.R., a district which has produced large crops of very fine wheat. The data are of some interest since these soils have borne probably ten crops of grain, with a bare fallow every third summer. The evidence is that these soils are still of an exceedingly rich character, plentifully supplied with semi-decomposed vegetable matter and high in nitrogen; indeed, as regards these constituents, the data are not such as would differentiate them from virgin prairie soils. In "total" phosphoric acid they are decidedly above the average, but the amounts of this constituent immediately available are very small. This may be due to the taking up of the available phosphoric acid by the grain crop being more rapid than the conversion of the insoluble soil phosphates into assimilable forms.

Nos. 7 to 10 inclusive are from the Dominion Experimental Farm, Indian Head, and constitute a very instructive series, since they allow a comparison between the virgin prairie with the same soil after 22 years of cultivation without manure. The soil would be designated a heavy clay loam. A complete record of the cropping and fallowing since the prairie was broken in 1882 shows that the "cultivated" soil has borne six crops of wheat, four of barley, and three of oats, with a fallow between each crop since 1887—nine fallows in all. The virgin soil was taken from an adjacent area, the point of collection being about 150 feet distant from where the cultivated soil had been taken. The samples were of a composite character, and every precaution was taken to have them thoroughly representative. There is every reason to suppose that the soil, over the whole area examined, was originally of an extremely uniform nature; in other words, that, at the outset the nitrogen content was practically the same for the soils now designated as virgin and cultivated, respectively. The tabulated data show the percentage of organic matter and plant food in the first four and the first eight inches of these soils, and make very clear that enormous losses of organic matter and nitrogen have followed upon the present method of continuously cropping with grain. The particulars respecting the nitrogen are given in the following arrangement, which allows a ready comparison of the two soils in this important matter.

DEPLETION OF THE NITROGEN

Nitrogen-content of virgin and cultivated soils, Indian Head, Saskatchewan

	To a depth of 4 inches		To a depth of 8 inches	
	Per cent	Lbs. per acre	Per cent	Lbs. per acre
Virgin soil.....	·409	3,824	·371	6,936
Cultivated soil.....	·259	2,421	·254	4,750
Difference or loss due to removal in crops and to cultural methods.....	·150	1,403	·117	2,186

Though the cultivated soil today, after nearly a quarter of a century's working, is still very rich, and possibly might yield as fine a crop as it did at the outset, yet compared with the untouched prairie, it is seen to have lost practically one-third of its nitrogen.

An inquiry as to what proportion of this loss is due to removal by crops and what to cultural operations shows that the nitrogen contained in the various grain crops grown in the twenty-two years amounted to approximately 700 pounds per acre. If we subtract this amount from the total loss, calculated to a depth of eight inches of soil, we shall see that more than twice as much nitrogen has been dissipated by methods of cultivation as has been removed in the crops. The loss ordinarily in the grain growing districts of the Northwest would not, in all probability, be as great as that here recorded, because, as a rule, the land is fallowed every third year only. Nevertheless, their deterioration must be marked, and unless checked by the adoption of a system of rotation involving the formation of a sod and by the keeping of stock, will inevitably lead to that low degree of productiveness which now characterizes large areas in eastern North America. A study of these partially exhausted areas both in Canada and in the Northeastern States makes

it clear that the deterioration has been, in a very large measure, due to the loss of humus and the dissipation of nitrogen consequent upon grain and potato growing, with out any due return of organic matter.

A quite marked falling off in phosphoric acid is also to be noted, though what is perhaps of more significance is the reduction in the proportion of this element in the available condition. Since loss of phosphoric acid cannot be accounted for save in removal by crops, it would seem that in continuous grain growing the rate of abstraction exceeds that of conversion, a probability to which we have already referred.

In the "total" potash, the differences throughout the series are not large, but, as in the case of phosphoric acid, we find that the percentage of "available" in the cultivated soil is considerably less than in that of the prairie.

No. 11 is from the prairie in the neighbourhood of Vermilion Hills, 130 miles west of Indian Head and some 20 miles north of Lake Chaplin. It is a dark-brown, sandy loam. In organic matter and nitrogen it is fully the equal of the heavier (clay) loams of the prairie, but as regards phosphoric acid, potash and lime it is, as might be expected, somewhat inferior. Although the "total" stores of this mineral plant food may not be very large, it is significant that the "assimilable" proportions are not less than in those heavier loams which are considered wheat soils par excellence.

No. 12 is from an area in the eastern part of the third steppe, 281 miles west of Indian Head along the main line of the C.P.R., and not far from the boundary between Saskatchewan and Alberta. The district from which this soil was taken enjoys, as a rule, but a very limited rainfall, and previous to the adoption of special methods for the conservation of moisture, gave but scanty yields. It was thought by some that the poor crops were due to a deficiency in some important fertilizing constituent, or to the presence of "alkali" or other matter deleterious to plant growth. From this analysis it will be seen that there is no lack of plant food, though the percentage of organic matter and nitrogen are only about one-half of those found in the richer prairie soils. Absence of "alkali" was established and the conclusion reached that the meagre yields were due to insufficient moisture rather than to any inherent fault in the soils.

SASKATCHEWAN SOILS

RESULTS CALCULATED TO WATER-FREE BASIS

No.	Locality.	Character of Soil	Organic and Volatile Matter (Loss on ignition)	Nitrogen	Phosphoric Acid (P ² O ⁵)	Potash (K ² O)	Lime (Ca O)	AVAILABLE CONSTITUENTS		
								Phosphoric Acid (P ² O ⁵)	Potash (K ² O)	Lime (Ca O)
			%	%	%	%	%	%	%	%
1	Moosomin.....	Black loam.....	11.79	.479	.116	.306	.95	.....	.....	.....
2	Tisdale.....	Grayish-black loam.	14.23	.480	.202	.622	1.11	.024	.041	.568
3	Saltcoats.....	Black, sandy loam	13.54	.572	.213	.340	2.89	.018	.033	1.110
4	Yorkton.....	" "	14.01	.504	.211	.486	1.17	.025	.048	.531
5	Wolseley, N.E. 1/4, Sec. 27.	Black loam (cultivated).	13.93	.514	.391	.555	.87	.005	.011	.306
6	Wolseley, S.W. 1/4, Sec. 27.	Black loam (cultivated).	10.98	.389	.369	.512	.76	.005	.018	.264
7	Indian Head.....	Black clay loam. Taken to a depth of 4 inches.	13.31	.409	.212	.863	1.26	.036	.070	1.187
8	"	Black clay loam. Taken to a depth of 8 inches.	12.83	.371	.234	.868	1.41	.032	.059	1.261
9	"	Black clay loam. Taken to a depth of 4 inches (cultivated).	10.20	.259	.159	.839	3.41	.016	.039	1.384
10	"	Black clay loam. Taken to a depth of 8 inches (cultivated).	10.70	.254	.163	.898	3.51	.013	.038	1.336
11	Vermilion Hills, Tp. 21, R. 5, W. 3rd.	Dark brown sandy loam.	10.43	.354	.164	.164	.50	.044	.050	.383
12	Maple Creek, sec. 16, Tp. 11, R. 26, W. 3rd.	Heavy clay loam.	5.54	.134	.064	.300	1.06	.....	.....	.....

Alkali Soils

These soils occur only in very limited areas in the province of Saskatchewan. Their extent has been greatly exaggerated as well as their injurious properties. Fortunately they do not constitute any serious drawback to the development of the province but as the term "alkali" is met with so frequently on the western prairies the following notes by the Dominion chemist appearing in a pamphlet entitled* "Alkali Soils" may be found of interest here.

Alkali soils occur in arid or semi-arid districts only, and these in Canada may be said to be restricted to certain areas in British Columbia, southwestern Alberta and in a limited degree Saskatchewan and Manitoba.

Two classes of alkali are generally recognized, "white" and "black."

White alkali consists chiefly of the sulphate and chloride of sodium (Glauber's salt and common salt).

Black alkali is characterized by the presence of sodium carbonate (washing soda), which through its solvent action on decayed vegetable matter gives a black incrustation to the soil.

Soils impregnated with alkali are injurious to vegetation, but the greater number of alkali soils when freed from excess of alkali are exceedingly fertile.

Black alkali is more injurious than white alkali.

Alkali soils can be reclaimed by thoroughly washing out and carrying away the alkali. If the natural drainage of the soil is not good, flooding by irrigation should be preceded by the construction of an adequate system of under-drainage.

The black alkali in soils can be converted by the application of land plaster (ground gypsum) into white alkali, which, as already stated, is a milder form as regards vegetable life. In this way large tracts of useless soil in the United States have been effectively and cheaply reclaimed. If the black alkali is only present in small amounts the land may be rendered cultivable simply by a dressing of land plaster, but in most cases it will be necessary to wash away the resulting white alkali before the soil is fit for bearing crops.

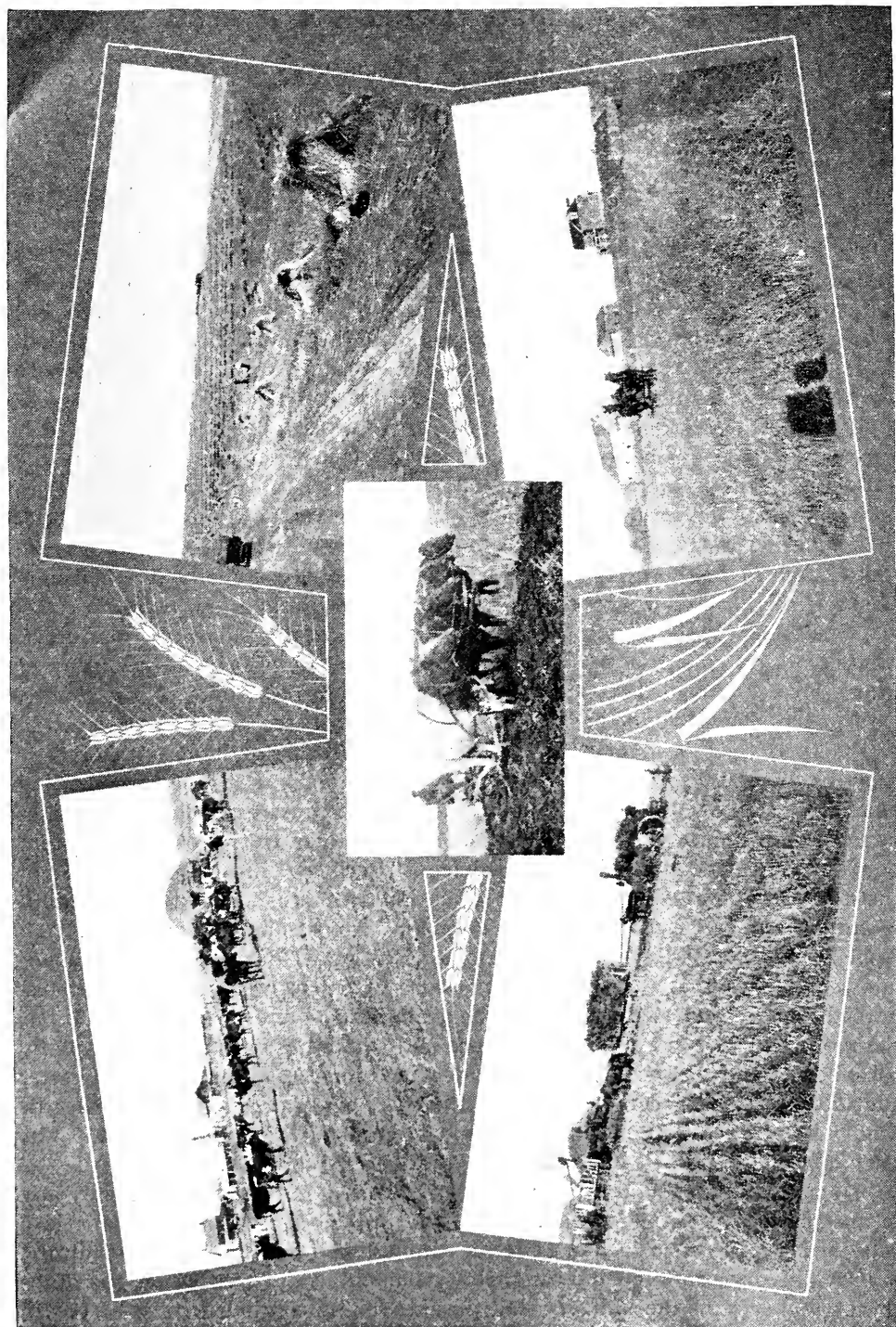
*"Alkali Soils", by F. T. Shutt, M.A., F.I.C., Dominion Chemist.

AGRICULTURE

Wheat has become to Saskatchewan a symbol of outstanding significance on a par with coals to Newcastle, diamonds to Kimberly or gold to the Klondike. The golden grain of her prairies has become famous the world over and her marvellous yields of "number one hard" have placed her in a position of pre-eminence among the wheat-producing provinces and states of North America. In 1915 her wheat crop exceeded in value the total output of gold from the Klondike during the whole of its history. The annual production now exceeds that of Manitoba and Alberta combined and in 1917 was more than double that of any state in the adjoining republic. Its average for several years has been well over the hundred million bushel mark, while in 1915, one of its "bumper" years, it reached well beyond two hundred millions. This is composed entirely of the famous hard spring wheat which makes the finest of flour so eagerly sought by all classes. The entire area sown to wheat as yet has not exceeded one-tenth of the available area judged suitable for grain-growing so that the outlook for still greater yields is indeed encouraging. In fact one hardly dare prophesy what the future may be expected to unravel, so marvellous has been the expansion in the last few years, but with a growing population to increase the acreage of cultivated lands, and with more intensive methods of farming the yield might not surprise us if it were to double within a few years.

Spreading westward from the famous Red River valley of Manitoba, where the first colonists of the prairies broke the virgin soil, a great army of wheat growers invaded Saskatchewan along the fertile banks of the Souris, Qu'Appelle and Assiniboine rivers. The riches of the great Saskatchewan valley lured their ever increasing ranks more northerly and the path of their progress might be fairly well indicated by a line starting at the international boundary, at the south-east corner of the province, and extending in a north-westerly direction to the point where the Saskatchewan river crosses its western boundary. As the crow flies this distance is nearly 500 miles and the heart of the belt is 200 miles in width. Within this area are included such famous wheat centres as Arcola, Estevan, Weyburn, Moosomin, Indian Head, Qu'Appelle, Regina, Moosejaw, Saskatoon, Rosthern, Battleford and Lloydminster—names that always suggest visions of expansive harvest operations. Spreading out from this main belt the grain fields have reached to all but the more northerly parts of the province and wheat has been supplemented by oats, barley and flax according to the demands for these grains or their better adaption to growing conditions, until their combined production now exceeds that of the former. Thus the total yield of grain in the province in 1917 was over 250 million bushels and in 1915 it was over 375 millions.

It must not be supposed, however, that farming in Saskatchewan is by any means limited to grain-growing. Since the provincial government came into existence in 1905 it has been most active, through its Department of Agriculture, in providing for a rational and complete system of farming that would guarantee the permanency of the industry and provide for its continued prosperity. In too many instances the richness of the soil has been the undoing of a new country.



Agricultural Scenes in Saskatchewan.

Lands have been mined, not farmed, and in a few years a depleted soil, over-run with weeds, is all that remains of what promised a wonderful future. To guard against such disaster has been the constant effort of the department and the success achieved is strikingly evident in the improved methods of farming everywhere seen, the tendency towards "mixed farming" and the remarkable yields in dairy products, wool, poultry and eggs, live stock, vegetables and kindred lines now found in all sections.

Lands and Products

The Crown lands of the province are the property of the Dominion government and are administered by the Department of the Interior at Ottawa. When such lands are alienated, however, either by sale, grant, homestead or otherwise, and patent issued therefor, further control passes automatically to the province. Free homesteads of 160 acres each are still available in the northern parts of the agricultural belt and a limited number in the southwestern part of the province. The former are chiefly bush lands and the latter are mostly rough. It must be admitted that the choice prairie homesteads have been practically all taken up. This class of land is now a purchase proposition. There is considerable lightly wooded land of excellent quality still available, however, for the homesteader who is willing to undertake clearing it.

The following statement shows the disposition made by the Federal government of those lands in the province surveyed up to the first of January, 1919:

LAND SITUATION—SASKATCHEWAN

Detailed Statement of Surveyed Area January 1, 1919

Lands	Acres
Area under Homestead (including Military Homesteads).....	27,133,700
Area under Pre-emption and Pur. Hds. (1st Sept. 1908 to 20th Mar. 1918).....	5,854,200
Area under Half-Breed Scrip, sales, Special Grants, etc.....	2,302,000
Area granted to Railway Companies.....	15,177,063
Area granted to Hudson's Bay Company.....	3,087,000
Area of School Land Endowment (1-18 of area surveyed in sections).....	3,932,000
Area sold under Irrigation System.....	76,672
*Area under Timber Licenses.....	1,119,200
*Area under Grazing Leases.....	3,009,100
*Area of Forest Reserves and Parks.....	6,195,700
*Area reserved for Forestry Purposes (Inside Surveyed Tract).....	1,430,000
*Area of Road Allowance.....	1,464,000
Area of Parish and River Lots.....	82,500
Area of Indian Reserves.....	1,119,454
Area of Indian Reserves Surrendered.....	344,414
*Area of Water-Covered Lands (Inside Surveyed Tract).....	1,902,300
Area now available for entry (Includes lands reserved for soldiers' settlement) ..	4,607,300
Total Surveyed Area.....	78,836,603

*Area not available for cultivation.

From this table it will be seen that 4,607,300 acres of surveyed land were available for homestead entry in January of 1919. Much of this has since been taken up but the surveyed area is capable of considerable extension so that there is still room for possibly 25,000 homesteaders and their families, although there is less good land now than formerly from which to choose a homestead.

In the following table is shown a classification of the farm land of the province according to an estimate made by the Dominion Census Office in 1916:

SASKATCHEWAN—Farm Land Classification 1916

Class	Farm Lands Occupied	Acres
I. Improved:		
(1) Under wheat.....	8,532,700	
(2) Under oats.....	3,543,600	
(3) Under barley.....	357,400	
(4) Under flax.....	519,500	
(5) Other.....	6,679,006	
		19,632,206
II. Unimproved:		
(1) Forest.....	2,192,547	
(2) Prairie.....	12,513,844	
(3) Marsh and waste.....	2,462,901	
		17,168,492
Total Farm Land Occupied.....		36,800,698
Total Farm Land Unoccupied.....		57,199,302
Total Area of Province Estimated Available for Crop Production.....		94,000,000

From these figures it is seen that the lands actually occupied consist of but little more than a third of the area suitable for agricultural purposes, and of such occupied portions only slightly over half is improved. If the estimate of 94,000,000 acres agricultural land is correct, and there is no reason to doubt it, then the ratio of actual improved land to that available amounts to only approximately 20 per cent or one-fifth. All conditions being equal it might be deduced then that the agricultural products could be expected to increase fivefold. However allowance must be made for inferior lands which might be included in the unimproved areas. Against this will be pitted the most intensive methods of farming being adopted from year to year so that it is impossible to place any estimate on future production. It is sufficient to point out that, stupendous as has been the yields, they are small compared with what may be confidently expected during the coming years. The following table shows the production of wheat, oats, barley, and flax for the years 1905 to 1918 inclusive:

Acreage and Yield of Wheat, Oats, Barley and Flax, 1905 to 1918

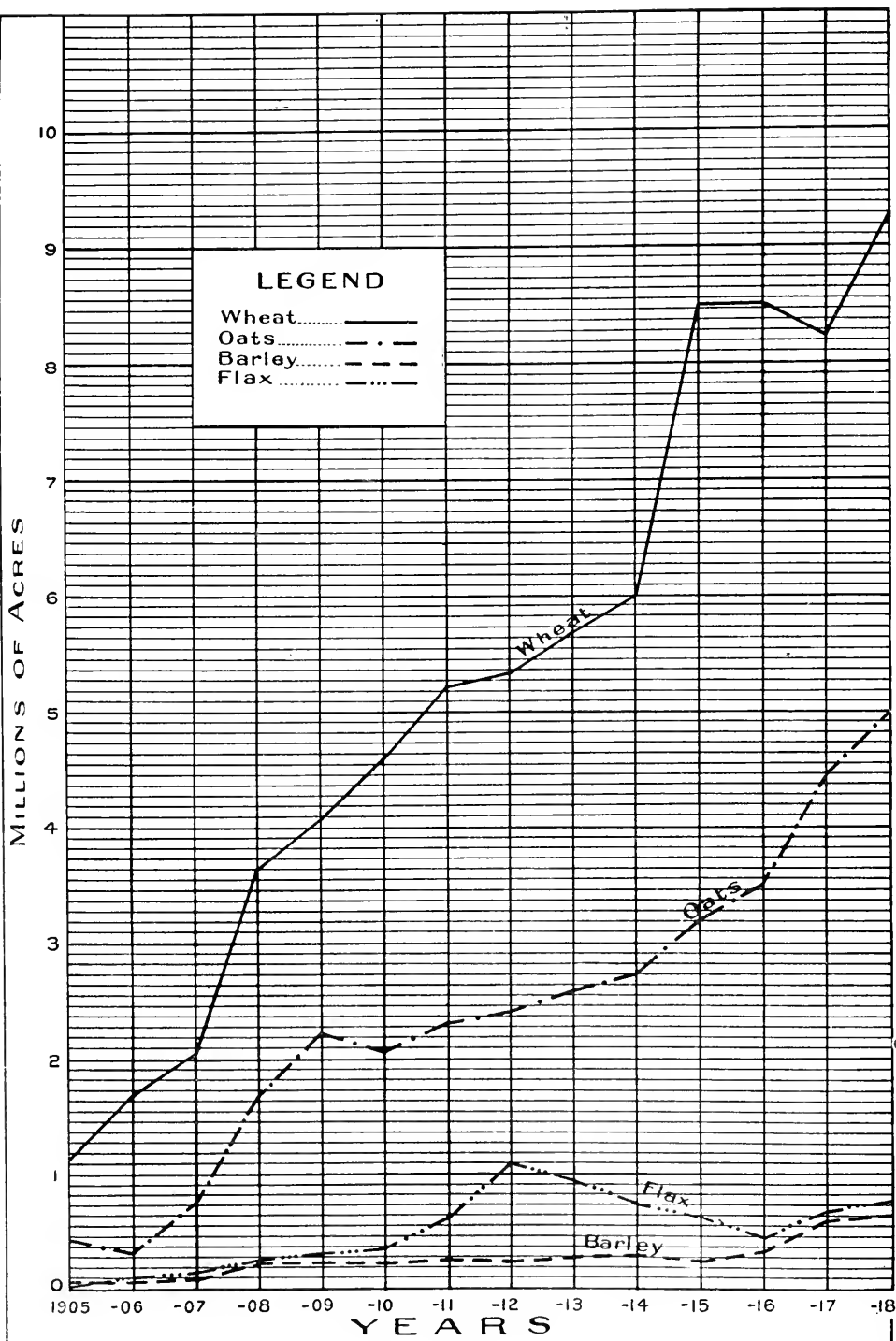
(Compiled from figures published by Department of Agriculture, Saskatchewan.)

Year	Wheat			Oats		
	Acreage	Production	Yield per Acre	Acreage	Production	Yield per Acre
1905.....	1,130,084	26,107,286	23.0	449,936	19,213,055	42.7
1906.....	1,730,586	37,040,098	21.4	369,873	23,965,28	37.4
1907.....	2,047,724	27,691,601	13.5	801,810	23,324,003	29.0
1908.....	3,703,563	50,654,629	13.6	1,772,976	48,379,838	27.2
1909.....	4,085,000	90,215,000	22.1	2,240,000	105,465,000	47.1
1910.....	4,664,834	72,666,399	15.5	2,082,607	63,315,295	30.4
1911.....	5,256,474	97,244,769	18.5	2,332,912	104,981,040	45.0
1912.....	5,384,092	107,167,700	19.9	2,421,932	107,619,948	44.4
1913.....	5,760,249	112,369,405	19.5	2,638,562	110,210,436	41.7
1914.....	6,003,522	74,610,643	12.4	2,792,611	66,698,953	23.8
1915.....	8,523,600	214,794,720	25.2	3,200,400	146,898,360	45.9
1916.....	8,532,700	121,864,454	14.2	3,543,600	138,882,716	39.1
1917.....	8,273,253	117,921,300	14.2	4,521,642	123,213,600	27.2
1918.....	9,249,260	92,492,600	10.0	4,998,499	107,262,728	21.5

Year	Barley			Flax		
	Acreage	Production	Yield per Acre	Acreage	Production	Yield per Acre
1905.....	32,946	893,396	27.1	25,315	398,399	15.7
1906.....	53,565	1,316,415	24.5	76,005	710,689	9.3
1907.....	79,339	1,350,265	17.9	128,528	1,364,716	10.6
1908.....	229,574	3,965,724	17.2	264,728	2,580,352	9.7
1909.....	244,000	7,833,000	32.1	319,100	4,448,700	13.9
1910.....	238,394	5,859,018	24.5	396,230	3,044,138	7.6
1911.....	273,988	7,671,664	28.0	682,000	7,706,600	11.3
1912.....	267,139	8,319,584	31.1	111,651	14,171,214	12.7
1913.....	307,177	9,279,263	30.2	976,137	11,654,280	12.0
1914.....	313,537	5,627,783	17.9	802,794	5,086,475	6.3
1915.....	285,000	9,462,000	33.2	697,000	7,806,400	11.2
1916.....	357,400	9,469,426	26.5	519,500	5,452,549	10.4
1917.....	669,927	14,067,900	21.0	753,700	4,710,600	6.2
1918.....	699,296	11,888,499	17.0	840,957	4,204,785	5.0

It will be observed that the years 1905-06-09 and 15 were particularly productive with 1915 holding the record. Its nearest rival was 1901 when wonderful crops were reaped. The three following years were also above the average.

The amount of land sown to wheat, oats, barley, and flax and the yields of these cereals during the years 1905 to 1918 is illustrated in chart form while the tables immediately following have been compiled to demonstrate the favourable position the province occupies in respect to the production of such cereals when compared with various states of the adjoining republic:



Prepared in the N.R.I. Br.

*STATEMENT of Saskatchewan's Wheat Production in 1916 and 1917 compared with that of each of the twelve States of the Union producing the largest quantity of this grain during the same year.

Province or State	Winter or spring wheat	1917	1916
Saskatchewan.....	Spring	117,921,300	121,864,454
Minnesota.....	Winter and spring	57,965,000	27,555,000
North Dakota.....	Spring	56,000,000	39,325,000
South Dakota.....	Winter and spring	52,024,000	24,825,000
Kansas.....	Winter and spring	45,934,000	98,022,000
Ohio.....	Winter	41,140,000	21,600,000
Oklahoma.....	Winter	35,650,000	29,585,000
Indiana.....	Winter	33,392,000	19,440,000
Illinois.....	Winter	30,400,000	16,775,000
Washington.....	Winter and spring	29,218,000	37,635,000
Missouri.....	Winter	27,540,000	16,575,000
Pennsylvania.....	Winter	24,482,000	26,125,000
Montana.....	Winter and spring	17,963,000	28,655,000

*STATEMENT showing Saskatchewan's production of Wheat, Oats, Barley and Flax compared with that of twelve States of the Union producing the largest quantities of these grains in the same year.

—	1917	1916	1915	1914	1913
Saskatchewan.....	259,913,400	275,669,145	378,961,480	152,023,854	243,513,384
North Dakota.....	121,201,000	121,208,000	301,304,000	181,743,000	169,380,000
Minnesota.....	217,995,000	144,130,000	252,120,000	162,719,000	218,634,000
Illinois.....	277,275,000	190,240,000	250,471,000	173,862,000	147,417,000
Iowa.....	265,732,000	206,182,000	224,662,000	189,616,000	195,018,000
South Dakota.....	144,974,000	101,373,000	161,862,000	97,681,000	95,935,000
Kansas.....	124,476,000	139,421,000	158,838,000	242,310,000	123,547,000
Nebraska.....	134,880,000	151,537,000	145,886,000	140,421,000	123,764,000
Wisconsin.....	125,527,000	103,075,000	128,019,000	84,147,000	104,954,000
Indiana.....	110,503,000	72,345,000	113,044,000	88,327,000	76,355,000
Ohio.....	120,560,000	69,243,000	110,127,000	87,738,000	90,420,000
Michigan.....	75,230,000	58,740,000	90,753,000	70,408,000	59,884,000
Oklahoma.....	62,262,000	44,765,000	74,552,000	78,400,000	36,103,000

*COMPARATIVE STATEMENT showing the average yields of Spring Wheat per acre in Saskatchewan and certain States of the Union during the past ten years.

—	1917	1916	1915	1914	1913	1912	1911	1910	1909	1908	Ten year average
Saskatchewan.....	14.2	14.2	25.2	12.4	19.5	19.9	18.5	15.5	22.1	13.6	17.5
Kansas.....	6.0	10.5	12.0	15.0	8.5	15.0	4.2	8.4	10.2	12.6	10.2
Minnesota.....	17.5	7.3	17.0	10.5	16.2	15.5	10.1	16.0	17.4	13.0	14.0
North Dakota.....	8.0	5.5	18.2	11.2	10.5	18.0	8.0	5.0	14.3	11.6	11.0
South Dakota.....	14.0	6.3	17.0	9.0	9.0	14.2	4.0	12.8	14.6	13.0	11.3
Nebraska.....	16.5	12.5	16.0	11.5	12.0	14.1	10.0	13.9	12.8	17.0	13.6
Iowa.....	21.5	13.0	16.7	13.5	17.0	17.0	13.8	20.9	12.9	17.2	16.3
United States.....	12.6	8.8	18.4	11.8	13.0	17.2	9.4	11.0	15.4	14.1	13.1

The commencement of seeding operations during the past ten years has varied from April 1st to May 6th with a ten year average for the whole province of April 8th. The corresponding average for general seeding operations was April 18th. Harvest operations usually commence about the middle of August. Wheat cutting is completed on an average by the end of the first week of September, barley cutting a few days earlier, oat cutting about the middle of the month and flax cutting by the end of the month or early in October. Threshing commences about the middle of September or slightly earlier and is rushed to completion as rapidly as labour and weather permit. Wages for threshing help for 1917 averaged for the province at \$4.25 per day, the farmer providing the board as usual. The nominal wages in the southern half of the province were from \$4.00 to \$4.50 and \$5.00 per day, while in the northern part, wages were slightly lower, ranging from \$3.00 and \$3.50 to \$4.50.

The large straw-burning steam threshing engines so common a few years ago are now being replaced by gas engines of the traction type which are also employed in ploughing and cultivating the land. The storing of the grain is provided for by some 2,000 elevators with a total capacity of about 60,000,000 bushels in addition to the Moosejaw and Saskatoon interior elevators of 3,500,000 bushels capacity each.

After threshing operations are completed as much land is ploughed as time will permit before freeze-up occurs. The fall of 1914 was an open one and the farmers were enabled to complete two-thirds of their ploughing. Usually less than half this work can be accomplished before winter sets in, the balance being left over till spring. The area under summerfallow is annually increasing while the new breaking is decreasing. The following table shows the areas of new breaking, summer fallow, fall ploughing and stubble lands prepared for the years 1914 to 1918 inclusive.

STATEMENT showing areas of new breaking, summerfallow, fall ploughing, spring ploughing and stubble lands prepared 1914-1917, and estimate for 1918.

—	New breaking of previous year	Summer- fallow of previous year	Fall ploughing of previous year	Spring ploughing and stubble	Total acreage
1914.....	1,148,855	2,775,489	1,733,805	4,253,305	9,912,464
1915.....	1,075,955	2,601,299	4,407,320	2,459,222	10,543,796
1916.....	945,598	2,668,400	2,253,891	7,085,511	12,953,400
1917.....	659,081	2,536,428	1,295,987	9,727,026	14,218,522
1918.....	431,698	3,758,941	1,943,980	9,766,898	15,901,512

In the early days of settlement wild hay was the only variety that could be obtained locally. Now domestic grasses such as rye and brome are being successfully grown in all parts of the province, while timothy and alfalfa are gaining a place of considerable importance. In the following table details of the yields and prices of domestic grasses, alfalfa and wild hay are given for the nine crop districts of the province. These nine divisions have been made to follow as closely as possible areas having a similarity of soil, climate, and general equality of growing conditions.

SASKATCHEWAN—Hay Yields and Prices 1916

District	Domestic Grasses		Alfalfa		Wild Hay	
	Average price	Average yield	Average price per ton	Average yield per acre	Average price per ton	Average yield per acre
	\$		\$		\$	
1 South Eastern.....	9 00	1.64	15 00	2 25	6 10	1.80
2 Regina Weyburn.....	11 40	1.88	13 00	2.60	7 88	1.60
3 South Central.....	9 75	2.00	12 00	3.16	7.75	1.37
4 South Western.....	12 00	1.40	12 00	3.00	9 27	1.40
5 East Central.....	7 73	1.76	10 00	2.80	5 00	1.81
6 Central.....	10 00	2.00	15 00	2.00	7 16	1.31
7 West Central.....	11 00	2.00	15 00	2.33	6 72	1.50
8 North Eastern.....	7 00	2 00	.....	.....	4 90	1.84
9 North Western.....	10 00	2.37	14 00	3.00	5 76	1.64
Province.....	9 75	1.89	13 25	2.64	6 72	1.585

The production of wool is also steadily on the increase.

The production and value of live stock are shown in the following table:

STATEMENT showing Increase in Production and Price of Live Stock in Saskatchewan 1918

—	1918	1917	In-crease	Price		Increased value
				1918	1917	
Horses.....	1,000,076	888,673	111,403	160 00	160 00	17,824,480 00
Cows.....	352,989	354,403 *	1,414	100 00	100 00 *	141,400 00
Cattle.....	926,342	856,687	69,655	81 00	52 00	2,017,430 00
Sheep.....	134,177	127,892	6,285	15 00	15 00	94,275 00
Swine.....	521,240	573,938 *	52,698	25 00	20 00	1,552,240 00
						21,317,025 00

*Decrease.

The homesteading of the land reached its zenith in 1910 when some 26,878 entries were recorded. The influx of population continued to rise, however, for some time after, the greatest number of immigrants to arrive in one year being 46,158 who came to the province in 1912. As the building boom was then at its height the tendency of newcomers to locate in urban rather than rural localities gained impetus from about the earlier of these dates.

210

200

190

180

170

160

150

140

130

120

110

100

90

80

70

60

50

40

30

20

10

0

LEGEND

Wheat.....

Oats.....

Barley.....

Flax.....

MILLIONS OF BUSHELS

1905

-06

-07

-08

-09

-10

-11

-12

-13

-14

-15

-16

-17

-18

YEARS

Wheat

Oats

Barley

Flax

prepared in the N.R.I. Br.

The following table contains statistics of the homesteading for a number of years when the highest limits were being reached.

STATEMENT showing the number of Homestead Entries in Saskatchewan made each month of the year for the past ten years

	1917	1916	1915	1914	1913	1912	1911	1910	1909	1908
January.....	172	268	327	669	657	803	642	976	605	711
February.....	128	298	293	533	541	893	830	1,069	636	718
March.....	220	368	416	796	820	1,190	1,610	2,688	1,271	967
April.....	274	371	475	1,166	1,637	2,263	2,483	4,240	2,393	1,607
May.....	234	508	516	875	1,523	1,948	2,328	3,745	1,611	1,526
June.....	394	536	756	1,262	1,811	2,243	2,516	3,440	2,347	1,907
July.....	321	477	742	1,178	1,720	2,269	2,446	2,576	2,304	1,551
August.....	317	383	658	757	1,231	1,726	2,194	1,958	1,218	1,110
September.....	230	396	422	436	840	1,275	1,679	1,530	1,316	4,162
October.....	255	294	484	885	1,150	1,213	1,499	1,845	1,816	2,905
November.....	275	317	692	624	1,417	1,513	1,422	1,783	2,492	2,001
December.....	147	299	568	571	1,168	1,089	1,032	1,028	2,072	1,639
Total.....	2,967	4,515	6,349	9,752	14,524	18,425	20,681	26,878	20,081	20,804

In the growing of vegetables and roots Saskatchewan has had an experience similar to that of its hay productions. It has been only in recent years that the province has come to the front in these respects. Now it is conclusively proven that table corn, peas and beans as well as all the common varieties of vegetables, roots and small fruits can be grown most successfully. Several prizes have been won by exhibits of these at international soil products expositions. The successes being attained along these lines suggest that the province may witness a phenomenal increase in the production of such fruits, vegetables, and roots. It now imports immense quantities of canned fruit and vegetables which might be grown and canned to better advantage within its own borders and adjacent to the centres of greatest consumption. With cheaper labour sugar beets might be grown in sufficient quantities to warrant the establishment of a refinery while the ever increasing dairy herds and poultry farms of the province offer a profitable use for field roots.

In live stock the province is well supplied and while there has been considerable increase in the numbers during the past few years particular attention is being paid to the improvement of the grade. Not "more stock" but "better stock" has been the advice of the agricultural officials and as a result the proportion of pure bred to grade stock is steadily on the increase. Poultry farming is making rapid strides while bee-keeping does not appear to have yet been undertaken to any extent. Dairying has been established as an extensive and permanent industry and is proving one of the greatest boons to the province. It not only creates a steady flow of business throughout the entire year, but draws the country gradually towards a condition of "mixed farming" which must eventually be accomplished to keep up its productiveness.

Government Aid

The provincial Department of Agriculture is most active in furthering the interests of farming in Saskatchewan. Its organization includes several distinct divisions of which the Dairy Branch, Live Stock Branch, Weeds and Seed Branch and the Co-operative Organization Branch are most closely associated with the improvement and advancement of the various lines of agricultural pursuit. In addition to these branches the department has a Labour Bureau, Statistics Branch, and Game and Museum Branch.

Saskatchewan has placed on her statute books many Acts brought forward from time to time for the encouragement and betterment of agricultural conditions. Many of these have been further amended to improve their working conditions after having been given trials so that now there is no province in Canada more progressive in the matter of useful farm legislation.

Among the many beneficial acts may be cited the Saskatchewan Co-operative Elevator Company Act, the Saskatchewan Co-operative Creameries Act, the Municipal Hail Insurance Act, the Stray Animals Act, the Farm Implements Act, the Agricultural Aids Act, the Municipalities Seed Grain Act, the Noxious Weeds Act, the Live Stock Purchase and Sale Act, the Agricultural Instruction Act, the Dairyman's Act, the Horse Breeder's Act, the Wolf Bounty Act, the Game Act, and the Saskatchewan Farm Loan Act.

The Farm Loan Board is authorized to loan money to farmers for productive and improvement purposes on the security of first mortgages on their farm. The amount loaned does not exceed fifty per cent of the value of the security offered. The rate of interest is the lowest possible. The term is for thirty years, on an amortization basis with the option of repaying more rapidly. During the first year's operations by this board, the sum of \$1,758,288.00 was loaned to farmers. The sums now voted annually by the provincial assembly to be expended under the terms of The Agricultural Aids Act amount to about half a million dollars. As money is essential for the expansion of any industry these actions of the government in providing it for the use of the farmers is most opportune.

The Co-operative Organization Branch has achieved remarkable results and today Saskatchewan stands out prominently as the leader of North America in the application of the principles of co-operation. The Saskatchewan Co-operative Elevator Company, Saskatchewan Co-operative Creameries, Limited, the Municipal Hail Insurance Association, and the Co-operative Wholesale Department of the Saskatchewan Grain Growers Association are outstanding examples of remarkable successes attending such enterprises. Some 500 co-operative associations throughout the province have been organized and registered under the guidance of this branch and are, with scarcely a single exception, meeting with great success. The co-operative branch itself conducts enterprises in the marketing of wool. An educational campaign has increased the standard of this product, satisfactory prices have been obtained and a great impetus has thus been given to the sheep raising projects.

The Dairy Branch is doing a most valuable work in fostering the growth of cream production and butter making throughout the province. No other branch of farming is more important than this. It creates a stability and permanence

that grain growing or stock raising alone fails to do. The conditions are favourable and the field unlimited. Farmers are quick to realize that in this department of their labour they have an opportunity to provide for a steady cash income the year round, to spread out the year's work more uniformly and to keep up the fertility of the soil. The transition to more intensive methods of mixed farming and dairying is rapidly spreading and speaks well for the future prosperity of the province.

Butter is now being shipped from Saskatchewan to Vancouver, Toronto and Montreal. Many private and co-operative creameries are to be found throughout the province and their number is continually being added to. The Dairy Branch now operate official grading stations at Regina and Saskatoon. Butter from the various creameries of the province is graded at the nearest station and stamped, while accompanying official grade certificates are issued. The producer, manufacturer and consumer are thus guided and protected in the trade.

The following table shows the amount of butter graded at each of the stations operated during the year 1918.

SASKATCHEWAN Butter Graded 1918

Station	Butter Graded		
	co-operative creameries	private creameries	Total
	Lbs.	Lbs.	Lbs.
Regina.....	1,248,632	474,810	1,723,442
Saskatoon.....	681,156	202,748	883,904
Prince Albert.....	182,742	159,978	342,720
Vonda.....	127,176	15,680	142,856
North Battleford.....	61,544	.....	61,544
	2,301,250	853,216	3,154,566

The Live Stock Branch devotes its energies to the betterment of the live stock industry generally. Chief among its varied duties has been the importation of pure bred stock for breeding purposes which are disposed of to farmers at actual cost and on favourable terms. This is a most important action and is having far-reaching and beneficial results in raising the standard of quality of horses, cattle, sheep and hogs throughout the province. It costs no more to raise or keep a good animal than one of inferior grade, while the returns obtained usually spell profit or loss as the case may be. The campaign for better stock is thus being augmented in practical form. Not only do the duties of the branch concern the production of stock but also its disposal to the best advantage. Transportation problems, stock yards management, packing house methods, activities of commission men and drovers and financial aids rendered by banks all require constant attention. Steps to put the industry on a sound basis have been most carefully and thoroughly considered and the stock raiser may feel assured of the best conditions possible under which to operate.

The Weeds and Seed Branch have a dual task in coping with that ever persistent enemy of the farmer—the weed—and in choosing and testing clean and sound seed. These matters may appear trifling on the surface but in reality if neglected spread disaster with alarming rapidity. Sound seed of strong germinating qualities and free from the presence of injurious neighbours is essential to ensure a healthy crop growth. Land overrun by obnoxious weeds cannot be expected to produce good results and if steps are not taken to eradicate the evil, the land soon becomes useless either for grain growing or stock raising. Both urban and rural municipalities are required to appoint weed inspectors before the end of March for the current year.

Gophers also destroy great quantities of growing crops, the estimate of this branch putting it at a quarter of a million acres annually. In destroying these pests the help of school children has been enlisted by offering various prizes and awards. During the year of 1917 some 880 schools joined in the competition and before Gopher Day, May 1st, had destroyed 514,140 of these little animals. Similar competitions were conducted during 1918 with much greater success. Seed fairs are now conducted annually at various points throughout the province.

Good work is being done in agricultural extension in connection with the various agricultural societies of the province. During the year 1917 there were held thirteen stallion shows, fifty ploughing matches, one hundred and thirty-three exhibitions, twenty-three standing crop competitions, sixty-two seed fairs, and twenty-eight poultry shows. Short courses in agriculture were held in fifty-seven points outside of the University during the first three months of 1918 in addition to a number of short courses provided for women. The total aggregate attendance at these courses was 6,796. Two week courses were also given at the College of Agriculture, as well as short courses in gas tractors. "Better Farming" trains have been operated from year to year on various lines throughout the province with marked success, the demonstrations and lectures being largely attended. Modern and scientific methods of farming are constantly kept before the public.

The Federal Department of Agriculture at Ottawa is also most active in furthering the industry in Saskatchewan. For many years an extensive experimental farm has been conducted at Indian Head. A wide range of live stock is constantly kept on hand. The keeping of poultry and bees has become a successful branch of the work. Experiments in rotation and cultural work are carried out on large scales, while work with cereals, forage plants and horticulture receive much attention. More recently experimental stations have been established at Rosthern and Scott and are meeting with remarkable success. The Federal Department embraces a number of divisions specializing on certain subjects, such as the divisions of chemistry, field husbandry, animal husbandry horticultural, cereals, botany, bees, forage plants and others. The province enjoys the privilege of benefiting by the results obtained from the work and experiments of these divisions.

Successes and Opportunities

The preceding pages amply illustrate the remarkable success attained by agriculturists as a body in Saskatchewan. Space will not permit of attempting

to quote individual instances. The homesteaders who have settled on their lonely "quarter" without means or capital, save an optimistic spirit backed by a stout heart, have found themselves in a few years financially independent and in possession of an enviable farm home in the midst of smiling plenty. In like prosperity are those who have purchased farms and paid for them out of the proceeds of the first few crops. In fact testimonials are freely submitted from delighted purchasers who have made payments in full from a single crop.

Annual visitors to the province have witnessed a series of scenes unfolding to their astonished gaze that constitute a drama of national growth crowding into the space of a few years the events that took our forefathers generations to accomplish. First on the lonely prairie is seen the humble "shack" of the bachelor homesteader, who drives with dogged perseverance his slowly moving yoke of oxen as the virgin soil is broken in long furrows. The next visit the golden grain is seen, the furrow has widened, cattle are grazing beyond and other "shacks" have made their appearance in the landscape. Succeeding scenes show rapid advancement. Horses replace the oxen, gas tractors assist the horses, the "shack" fades from the scene and modern buildings spring up as if by magic, the patches of grain take definite shape in expansive fields. Trees, flowers, a woman's face and romping children appear and the annual tourist wakes up with a start to find that in a few short years the pioneer scenes that interested him have passed away and he is merely travelling in a land as conventional as his own.

No reference to the successes attained by Saskatchewan farms would be complete without mention of the envious record attained by this province in the winning of awards in various wide competitions in agricultural exhibits. The proud boast of the province as being the king of wheat-growing countries has been substantiated by Mr. Seager Wheeler of Rosthern, who has five times won the world's championship in the wheat class. In grains of all kinds, grasses, and even during later years in vegetables, the province has attained remarkable success in competition with all comers. Out of forty-six exhibits shown at the Dry Farming Exposition at El Paso in 1916 by farmers from Saskatchewan forty-four prizes and three sweepstakes were captured. Equally satisfactory results were obtained at The International Soil-Products Exposition and Dry-Farming Congress held at Peoria, Illinois, in 1917 and at Kansas City, Missouri, in 1918. In both quantity and quality the yields of the Saskatchewan farms are able to hold their own with the world.

But what are the opportunities now? This is the question that concerns every prospective citizen of Saskatchewan. Are free lands still to be had? Are good wild lands available for purchase at reasonable prices? Are improved farms being offered for sale on terms that promise good investment? Are the chances for the poor man as good as ever? Can the small farmer with limited capital find in this new province an opportunity to expand? Are its roads, markets and general conditions advanced to a sufficient degree to warrant heavy investments in large modern method operations of farming? These are questions which demand specific replies and evasive statements or broad generalities will not suffice.

With improved agricultural conditions, better transportation facilities, rural telephones, and good markets the opportunities for success in grain farming, mixed farming, dairying, and poultry-raising are better than ever before, even if free prairie homesteads are almost a thing of the past. The chances for the man without means to file on a quarter section which will spring into sudden heights of value are not good. Homesteads are still available but not on the prairie. The poor man's opportunity still awaits his coming but the procedure is not the same as in the boom days. It is nevertheless as sure if not as fast. In the northern parts of the province lightly wooded homesteads are to be had. The land here is good and the district is admirably adapted to mixed farming. Until sufficient land is brought under cultivation to yield a revenue that will support him the homesteader in his spare months is assured of plenty of work at good wages—an advantage not available in the earlier days. If not afraid of work the man without means need not hesitate. In ten or fifteen years he will, with ordinary luck, be possessor of a good farm home that will yield him an independent living.

The greatest opportunities lie in the vast areas of unimproved vacant land held by absentee landowners, railroad companies and others. These lands comprise a considerably greater area than that occupied. They are scattered throughout the whole province and have the advantage of being sandwiched in between the improved lands, thus giving their purchasers the advantage of roads, school, markets, and the like enjoyed by older settlers. The average man who has homesteaded will tell you that, provided he has enough means to warrant the undertaking, he would buy vacant land rather than repeat his homesteading experiences were he called upon to decide again. On such locations as these the newcomer finds himself launched at once into the midst of a flourishing settlement and his pioneering is deprived of its hardships and loneliness. Neighbours assist him in erecting a house and getting a start, in return for which they are glad of his help in harvest time before he has a crop of his own. In like manner his land is quickly broken, crops are soon being harvested and often such men pay for a farm before a homesteader gets his patent. Prices for vacant lands are very reasonable, all things considered, and will never be less. As an example the figures obtained from sales of school lands in Saskatchewan during the past few years are shown on the following table.

*SASKATCHEWAN—School Lands Sales

Year	Average Prices obtained for Wild Lands	
	Acres sold	Average price per acre
		\$
1916.....	116,791	14 15
1917.....	214,899	18 90
1 18.....	535,066	22 54

*School Lands Branch, Department of the Interior, Ottawa.

These figures are generally higher than the price of wild lands for the reason that farmers on adjoining sections bid strongly to secure land convenient to their holdings, and get easy terms for payment.

Improved farm lands are being bought and sold at reasonable prices depending to a large extent on their location, amount of improvements, and records in production. Both improved and unimproved farm lands in Saskatchewan represent the soundest of investments.

To the extensive operator no better field is offered. The great level stretches of choice land, free from hills or ravines, stones or stumps, offer unparalleled opportunities for the successful operations of power machinery. At the prices lands can be purchased in Saskatchewan today no mistake can be made in securing all one can faithfully attend to. They are bound to advance as settlement grows more dense. The rural opportunities offered in the province of Saskatchewan are genuine and attractive and success awaits the newcomer now as surely as it has crowned the efforts of those who cast in their lot earlier.

CITIES AND TOWNS

For a purely agricultural province the growth of Saskatchewan's urban centres is most remarkable. It demonstrates with striking force the source of wealth derived from the land. No seaports or fishing towns are found to swell the ranks of urban dwellers as is the case of provinces bordering on the sea. No vast deposits of raw material have caused great manufacturing cities to spring up in their proximity and speedily outnumber the rural inhabitants. The various cities, towns and villages of the province have sprung into existence to meet the requirements of their immediate vicinities as the land became settled, and their growth has been entirely dependent on, and in harmony with, the progress of agricultural development.

The agricultural barometer indicates the state of the city's business as accurately as it does that of the farm. As the time for harvest approaches the banker watches the weather as anxiously as the farmer. Railway companies and financial institutions send out an army of experts to keep them supplied with crop reports and estimates of the probable yield. Almost every business move depends on these reports. Let an adverse rumor appear and a spirit of retrenchment or economy permeates the air. But let a bumper crop be announced and everybody smiles. Railroads rush in empty cars on every siding in readiness to receive the golden grain, bankers work overtime changing money, and business everywhere booms. Implement dealers relax their anxious vigils while the piano agent gets his opportunity to make a record sale.

The success or failure of the crop is of vital interest to every home and forms the chief topic of conversation on the street, in the club or about the family fireside as the climax approaches. It is needless to state that success has happily been the good fortune of the province almost universally. Its wonderful advancement proclaims it more eloquently than words could. A few partial failures

and varying degrees of success have established a period of anxiety, which will probably never disappear, though it is becoming more and more a period of estimate rather than of anxiety.

The urban growth as compared with the rural makes an interesting study. While both have been wonderfully rapid the greatest rate of increase goes to the former. The general tendency of the world has been a drift of the population to the centres and strenuous efforts are everywhere in evidence to get the people "back to the land." In a new country such as Saskatchewan, advertised as a farming district offering free lands, one might expect the rural population to increase more rapidly than the urban. Some explanations may be offered in this respect. In the first place the census returns include as "urban" the population of villages, which after all are largely rural, containing many farmers whose lands adjoin. The same applies to a large extent to the towns. Before roads or schools were available many farmers established their families in the nearest town and divided their own time between town and farm. With the coming of better roads came also the automobile, permitting him to continue the arrangement to even better advantage. Children were formerly sent away for their higher education. Now they receive it in their own province. Prosperous farmers spent their winters at the coast or in eastern or southern cities. With the improved conditions in their own cities and the advantages of modern utilities afforded they are now building city homes in their own province. Were these factors all taken into consideration it would be evident that there is a healthy and well balanced rate of growth in both urban and rural Saskatchewan.

The following figures are compiled from the official census returns of 1906 and 1916.

SASKATCHEWAN URBAN POPULATION

1906				1916		
Urban	No.	Pop.	Per cent.	No.	Pop.	Per cent
Cities.....	4	20,778	7.15	7	79,921	12.34
Towns.....	24	21,380	6.39	72	49,427	7.63
Villages.....	70	6,304	5.26	304	46,949	7.25
Total Urban.....	98	48,462	18.00	383	176,297	27.22
Total Rural.....		209,301	81.20		471,538	72.78
Total Population.....		257,763	100.00		647,835	100.00

In 1906 the urban population was 18.8% of the total and the rural 81.2. In 1916 the ratios were 27.22 and 72.78. The urban showed a ten year increase of 263.8% and the rural of 179.8%. The cities and towns, with their populations according to the census of 1916 are shown in the following list. In addition there were 314 incorporated villages in 1918.

CITIES AND TOWNS OF SASKATCHEWAN

Population shown for 1916

City	Population	City	Population
Moosejaw.....	16,934	Saskatoon.....	21,048
North Battleford.....	3,145	Swift Current.....	3,181
Prince Alb. rt.....	6,436	Weyburn.....	3,050
Regina.....	26,127		

Town	Population	Town	Population
Alameda.....	304	Macklin.....	250
Alsask.....	301	Maple Creek.....	1,140
Arcola.....	852	Melfort.....	971
Asquith.....	272	Melville.....	2,100
Assinibolia.....	719	Milestone.....	450
Balgonie.....	221	Moosomin.....	1,329
Battleford.....	1,436	Morse.....	452
Biggar.....	830	Mortlach.....	456
Bredenburg.....	169	Nokomis.....	508
Broadview.....	877	Ogema.....	276
Canora.....	835	Outlook.....	613
Carlyle.....	412	Oxbow.....	678
Carnduff.....	555	Qu'Appelle.....	722
Caron.....	254	Radisson.....	438
Craik.....	427	Radville.....	621
Davidson.....	513	Rosetown.....	731
Delisle.....	286	Rosthern.....	1,200
Duck Lake.....	459	Rouleau.....	495
Estevan.....	2,140	Saltcoats.....	491
Fleming.....	310	Scott.....	316
Francis.....	222	Shaunavon.....	897
Gavan.....	500	Sintulata.....	364
Grenfell.....	873	Strassburg.....	544
Gull Lake.....	712	Sutherland.....	940
Hanley.....	368	Vonda.....	323
Herbert.....	950	Wadena.....	449
Humboldt.....	1,435	Wapella.....	441
Indian Head.....	1,334	Watrous.....	843
Kamsack.....	1,202	Watson.....	246
Kerrobert.....	571	Whitewood.....	446
Kindersley.....	770	Wilkie.....	815
Langham.....	352	Woleseley.....	1,054
Lanigan.....	372	Wynyard.....	682
Lemberg.....	410	Yellowgrass.....	408
Lloydminster.....	494	Yorkton.....	3,144
Lumsden.....	615	Zealandia.....	242

The Provincial Government, through its Department of Municipal Affairs, exercises a general supervision pertaining to the welfare of all urban and rural municipalities. One of the most vexed questions concerning these that has arisen in recent years has been that of taxation. During 1917 the Department engaged Doctor Robert Murray Haig, Assistant Professor of Economics, Columbia

University, New York, to make a survey of the incidence of taxation in the urban municipalities and report thereon with suggested improvements. His report treats the matter most comprehensively and his recommendations favour a reduction in land taxation and an increase in that on improvements. The general drift had been towards the "single tax", villages being permitted on a two-thirds vote to adopt this system, while towns and cities were allowed to reduce the assessment on improvements below the normal figure of 60 per cent fixed by law. In 1917 the seven cities of the province assessed their improvements at percentages of their full value ranging from 15 to 45 while 81 villages were operating on the "single tax" basis.

Considerable legislation in the interests of the municipalities has been enacted from time to time of which the "Town Planning and Rural Development Act" is worthy of special mention. It came into effect on July 1, 1918, and aims to insure that townsites will be laid out on modern healthful lines rather than for the purpose of speedy sale and high profits to the vendors. "The Village Act" has been amended to provide for assessment of lands, buildings and improvements, personal property and income. "The Union Hospital Act", "The Arrears of Taxes Act" and "The Seed Grain Act" are other progressive enactments.

Brief descriptions of the seven cities of the province follow. Persons desirous of obtaining fuller information or particulars of business, professional, educational or other opportunities in these cities or in any of the towns and villages of the province should communicate with the local officials. It may be taken for granted that each city and town has a Board of Trade. Inquiries, therefore, should be addressed to the secretary of such body or to the chief municipal corresponding officer, namely, the city clerk, town clerk, or village secretary-treasurer as the case may be.

Regina

The history of Regina dates back to 1882 when the first settlers arrived and erected a canvas town about a mile west of the centre of the present city. The town site was selected the following year, being arranged jointly by the Government and the Canadian Pacific Railway Company. The name "Regina" was conferred upon this townsite by Lord Lorne, then Governor-General of Canada, and on the 27th of March, 1883, the town was declared to be the seat of government of the Northwest Territories in place of Battleford. The Northwest Mounted Police also selected their headquarters here about the same time. In May Lieutenant-Governor and Mrs. Dewdney took up their residence. A post office, school, and a Dominion Lands Office were opened in the spring and by October the Government buildings, Council Chamber, and Indian Office were ready for occupation.

Regina was incorporated as a city on June 19, 1903, just twenty years later. In 1905 it became the capital of the newly created province of Saskatchewan and in 1908 the erection of the Parliament Buildings was commenced. It has been said that there are no Parliament Buildings more dignified or better adapted to the needs of legislative work than these. The building is constructed of Tyndall stone, fireproof throughout, and was erected at a cost of approximately \$1,900,000. The Departmental offices were occupied in the fall of 1910.

The length of the building is about 543 feet, and the height of the dome approximately 187 feet. The central portion is 98 feet in width and 267 feet in depth with a wing on either side, each 222 feet long and 72 feet in depth.

Regina is a great financial centre of the province, and its development in this respect is very remarkable. Fourteen of the leading Canadian banks now have branches in the city and the majority of them have erected substantial and elaborate offices of their own. The Bank Clearing House Association was established in 1909 and the clearings for 1918 were \$184,624,626. Practically every loaning institution of importance in Canada has an office in the city, many of them occupying their own building. A very large volume of business is transacted in the purchase and sale of bonds and debentures of the municipalities and school districts of Manitoba, Saskatchewan and Alberta, the City being the headquarters of Western Canada for this class of business.

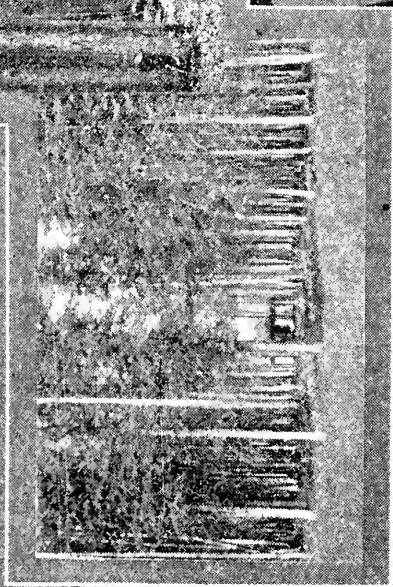
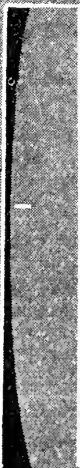
Twelve lines of railway radiate in all directions from the city and plans are under way for the construction of ten additional branch lines. The city has also some 320 acres of municipally owned industrial sites served by a spur-track system for the benefit of manufacturers and distributing houses. These sites are sold on easy terms to bona fide applicants or leased for terms of 49 years. A vast volume of business is already accumulating in this section, in 1913 the wholesale distribution business amounting to over \$40,000,000.

Regina has now a large number of manufacturing concerns, some 114 wholesale and over 360 retail houses. Included in these are the \$200,000 buildings of the Robert Simpson Western Limited erected in 1916, the \$500,000 refining plant of the Imperial Oil Company erected in 1916, the \$200,000 Mail Order House of the T. Eaton Company, Limited, and many other large buildings.

The city is a firm believer in municipal ownership and owns its street railway, light and power plant, and municipal stock yards. It is the headquarters of the Saskatchewan Co-operative Elevator Company, and the Grain Growers' Grain Company, both of which have been of remarkable benefit to the grain-growing communities. Its public market is under the control of the Local Council of Women. Besides the government and municipal buildings the city has the Regina College, St. Chad's College, the Provincial Government Normal School, all carried out in Gothic treatment, and a Collegiate Institute of classic design. Its many schools, churches, hospitals, and business blocks are a credit to any city while its uniformly superior residences have given it the title of "The City of Beautiful Homes".

Saskatoon

The city of Saskatoon is beautifully situated on the South Saskatchewan river in the heart of one of the greatest wheat growing belts of the world. Its growth has been most remarkable. In December, 1903, the entire population consisted of 113 souls, in 1911 it had jumped to 12,000 and by 1916 it had passed the 21,000. It is now estimated at 25,000. In 1909 it was selected as the seat of the Saskatchewan Provincial University and Agricultural College and has thus become generally known as "The University City". Its splendid educational facilities are augmented by some twenty-one places of worship. Three of the larger churches may easily rank with the most beautiful religious edifices in the Dominion. The residences of the city are also of a high class.



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(1) Scooping Rapids on Sturgeon-Weir River (2) Rapids on Churchill River (3) Pasquia Forest Reserve on line of C.N.R.
(4) Spruce-Poplar type of Saskatchewan woods (5) East shore of Amisk (Beaver) Lake.

Its unique geographical location makes it a natural centre for a vast district. Here is found a favourable site for crossing the valley of the South Saskatchewan river and the three great Canadian Transcontinental lines have bridged the waters with structures ranging in length from 1,000 to 1,530 feet. There are also two traffic bridges. One is built of steel and is 1,000 feet long. The other is a most beautiful reinforced concrete structure, consisting of ten arches, four of which have a span of 150 feet each. The total length of this bridge is 1,593 feet. The traffic of this district is thus focused on the city. The river also provides an adequate and pure supply of water at all times of the year.

Municipal ownership is exercised in relation to water, light, power, street railway, sewerage and hospitals. These various utilities have been most successfully managed and show surplus revenues over expenditures. At the same time the rates are most reasonable, those for power being especially enticing. Its splendid shipping facilities, central location and the great agricultural district surrounding it guarantees the commercial future of this progressive city. Among the industrial institutions are found the Dominion Government elevator with a capacity of 3,500,000 bushels and the mammoth western plant of the Quaker Oats Company of Chicago.

Among the natural resources which are likely to be available for the city's use may be mentioned coal, gas and building material. These are all found at no great distance and will probably be made accessible in a short time. Building stone is found on the ground and has already been utilized in the erection of the University buildings.

As a residence city Saskatoon takes a leading place. Its site, overlooking the valley of the river, and commanding an extensive view of the prairies, is admirable. Its wide and well laid out streets, flanked by avenues of trees, its parks and drives, and its general planning along sanitary, healthful and progressive lines, make it an attractive location for homes. The social, educational and business advantages of this city are worthy of consideration.

Moosejaw

This progressive city is located on Moosejaw Creek about fifty miles west of the city of Regina, and also in the heart of an extensive wheat belt. Indian legends tell us that some fifty years ago a pioneer, Lord Dunsmore, with his wife and child, camped at a point and mended the broken wheel of his "Red River" cart with the jaw bone of a moose. They afterward spoke of the spot as the place where the white man found the moose jaw, hence the name. In 1906 the population was 6,250, which increased during the next ten years to nearly three times this number. It is the great railroad city of the province being the divisional point of the Canadian Pacific Railway. These yards are the third largest individually owned in the world.

Founded as a town in 1884 on this newly constructed railway it early became an important divisional point with an ever-increasing pay-roll which went to build it up. From here lines were built south-easterly to Minneapolis and St. Paul and north-westerly to Edmonton, in addition to several local lines. The surrounding district developed into a rich wheat-growing area and the city now finds itself the centre of an extensive and populous agricultural district. Its

commercial and industrial expansion has been rapid. The Dominion Government has erected an elevator here with a capacity of 3,500,000 bushels. Flour-milling has been extensively prosecuted while the butter now graded and shipped from this point amounts to considerable proportions.

Moosejaw owns and operates its own light and power plant. In 1917, this utility showed a surplus of \$7,692.32 after paying all charges, including interest, sinking fund and depreciation. Its fire loss has been exceptionally small. The city is well laid out and has a substantial class of public buildings, business houses and residences. Its educational and social facilities are in keeping with its general advancement and the future of the city bids fair to witness continued prosperity.

Prince Albert

Prince Albert is beautifully situated on the south bank of the North Saskatchewan river a few miles above its junction with the south branch. It is located in the midst of a particularly good mixed farming country and with respect to the province as a whole occupies a more central position than any of the other six cities. This location will stand it in good stead when the unlimited and varied resources of the great north land come to their own. Already the city has felt the beneficial influence of its forests and fisheries and to a lesser degree of its minerals.

Prince Albert is one of the oldest centres of the province and in its early days was headquarters for a number of river steamboats plying the waters of the Saskatchewan. It is now served by two railway companies whose lines give direct connection with Winnipeg, Regina, Saskatoon, Battleford and beyond, as well as a thorough local service including a branch line northerly to Big River in the heart of the lumbering district. A joint railway and traffic bridge spans the Saskatchewan in front of the city and a network of roads and trails lead out in every direction.

Its principal industry for many years has been lumbering, its mills giving employment to thousands of men and providing a market for vast quantities of farm produce. This amounts annually to about 100,000 bushels of oats, 1,000 tons of hay, 250,000 pounds of pork, as well as enormous quantities of vegetables, butter, and other farm produce. The output of sawn lumber from this city has reached a total of about 100 million board feet. About 5,000 men and 1,500 teams are now employed during the winter months in the woods, and about a third this number during the summer months.

Another industry of vital interest to the district is the newly erected plant of the Burns Packing Company which has a capacity of 100 head of cattle a day and 100 hogs per hour. A flour mill and a creamery have also been established and have attained a permanent place in the industrial sphere. The city, therefore, has splendid opportunities for advancement.

Among the public institutions is included the Dominion penitentiary located on its own farm adjoining the city boundaries. The Dominion Land and Crown Timber Agent, Mining Recorder, District Forestry Inspector, Customs Officers and Provincial Police District Officers are also located here. The wholesale and retail houses and the hotels of the city are well in keeping with the best.

As an educational centre the city has excellent advantages. It has four public schools, a collegiate institute, a girl's school, a convent for the education of girls and an institute recently opened by the Presbyterian church for the training of Ruthenian boys. Two large hospitals are among the public buildings. The city is also noted for its fine churches. It is the site of the Roman Catholic bishop's residence and the diocesan cathedral. The Anglican Pro-Cathedral is also located here and the Bishop of Saskatchewan also has his headquarters and residence in the city. The Presbyterians, Methodists, and Baptists have excellent churches.

The financial houses of the city include eight banks. The public utilities include the provincial government telephone system and municipal electric light and power and water service. During the past ten years the city has made vast improvements in its streets, parks, and buildings till it is now a decidedly attractive residence centre with its hillside location overlooking the river and its substantial buildings attractively set off by a sprinkling of trees and shrubs.

Swift Current

Swift Current is the third city of Saskatchewan located on the main line of the Canadian Pacific Railway. Its history dates back to the building of this first transcontinental line, and it has witnessed a steady growth. In 1914 it was granted incorporation as a city and in 1916 the government census showed it to have a population of over 3,000. For many years it was an important ranching centre and the shipping point for a large number of western cattle. During more recent years the ranching lands have been largely encroached upon by grain growers and the district has proved a successful one for both ranching and farming.

The utilities are municipally owned and the advancement of the city generally is along most progressive lines. Some eighteen wholesale houses, and five elevators are doing a large business. Its industrial concerns include a 200-barrel flour mill, cement products factory, aerated water factory, planing mill and creamery.

Among the business and educational institutions are found eight banks, a high school, three public schools, a business college, land titles and judicial districts offices, a customs house and two newspapers. It has also five churches and a very creditable showing of substantial residences. Its distributive area embraces about 3,000 square miles of the south-westerly part of the province.

North Battleford

This new city has sprung up with astonishing rapidity on the north bank of the Saskatchewan river opposite the old historic town of Battleford, one time capital of the Northwest Territories and about which still clings the fast fading landmarks and legends of pioneer days, mounted police exploits and Indian rebellions. The old town might have grown to be the great city of this

district had not the westward creeping railway, void of any sentiment, crossed the river and passed it by on the north bank leaving the yawning depths of the forbidding valley between to shut it off and permit a rival to grow up before its eyes, usurp its name and spring into fame on its reputation. A day of retribution may yet come. The valley has been traversed by roads, the river bridged, connection with this and other lines of steel secured and an outraged town of mature years threatens still to run this phenomenal child city a stern race. In the meantime, however, the city has gained a wide start.

It is a divisional point on the Canadian Northern Railway and the distributing point for the great areas of farming and grazing lands extending northerly to the fertile valley of the Beaver river. Another line to the north of the river makes direct connection with Prince Albert. The city is built on a commanding site overlooking the Saskatchewan valley and the bald prairies of the district give it an extensive view in every direction. It has been most fortunate in the permanent nature of its buildings which have been erected. Too often the rapid growth of a new town is marred by a cheap class of buildings being hurriedly thrown together. The traveller cannot but be struck by the absence of such signs in North Battleford. Not only are the streets and public buildings of an attractive, modern and permanent nature but the residential sections exhibit the same traits. The expansion of the city along these lines is most adequately provided for. A very fine collegiate institute and a number of excellent schools are found. The churches, hospitals, and library are well in keeping with their usual high standing throughout the province. The outlook of this young city is very promising.

Weyburn

Weyburn occupies the most southerly and easterly location of any city of Saskatchewan and lies in the heart of a prosperous farming community. The land about it has long since been all taken up and as the acreage being put under crop has steadily increased a great number of rural villages and towns have sprung up. The pioneer stage has passed and scientific and intensive methods of farming are making a most permanent and prosperous section about this centre, increasing the scope of its distribution and commercial and industrial activities.

It has also the additional advantages of being located in the lignite coal area, the deposits of which are now being utilized to great commercial advantage, especially in connection with clay working industries which find an abundant supply of suitable raw material throughout the southern parts of the province. Its outlook for industrial expansion in these and other lines is most promising.

It was made a city in 1913 and its municipal policy has been active and progressive. Its utilities are quite up to the standard and are publicly owned. In financial, educational, and commercial matters it is in excellent condition. It offers inducements of no mean proportions to those seeking commercial or industrial opportunities as well as to those seeking a residence location.

Further statistics of the three largest cities are shown on the following table:—

PRINCIPAL Cities of Saskatchewan

Details	Regina	Saskatoon	Moosejaw
Date founded.....	1882	1883	1884
Date incorporated as city.....	1903	1906	1903
Population 1906 (Gov. Census)	6,169	3,011	6,249
Population 1911 ".....	30,213	12,004	13,823
Population 1916 ".....	26,127	21,048	16,934
Population 1918 (estimated).....	40,000	25,000	20,500
Total area in acres.....	8,427	8,480	9,760
Area of parks in acres.....	257	395.5	170
Miles paved streets.....	30	5.8	5.1
Miles concrete sidewalks.....	42	53.8	40
Miles plank sidewalks.....	72	14.8	30
Miles sewers.....	69	48.2	45
Miles water mains.....	73	45.8	67
Miles street car lines.....	32	16	12
Number railway lines radiating.....	12	3 Transconti- nental.	8
Number schools and colleges.....	19	{ 1 University, 13 schools, and 1 college.	{ 7 schools, 2 colleges
Number of churches.....	29	21	17
Number of theatres and rinks.....	8	6	6
Number city police.....	31	22	14
Number city firemen.....	36	36	30
Number banks.....	14	15	11
Number wholesale houses.....	114	52	20
Number retail houses.....	360	200	150
Number manufacturing plants.....	15	42	15
Number daily newspapers.....	2	2	2
Number weekly newspapers.....	2	3	2
Bank clearings, 1918.....	\$184,624,626.00	\$91,412,813.52	78,425,563.00
Tax receipts, 1918.....	1,372,070.82	671,853.53	699,595.64
Customs receipts, 1918.....	1,527,325.12	1,167,377.86	514,867.23
Postal receipts, 1918* (sale stamps).....	561,854.23	190,398.69	119,764.35
Assessment value, 1918 (net).....	57,272,550.00	30,018,838.00	24,462,055.00
Value municipal buildings.....	1,280,200.00	42,000.00	680,000.00
Value Prov. Government Buildings.....	2,566,500.00	122,000.00	202,166.00
Value Dom. Government Buildings.....	445,800.00	120,500.00	108,555.00
Waterworks ownership.....	Municipal	Municipal	Municipal
Light and power ownership.....	"	"	"
Telephone ownership.....	Prov. Gov.	Prov. Gov.	Prov. Gov.
Street railway ownership.....	Municipal	Municipal	Private
Tax rate (Pub. School), 1918.....	30 mills	30.25 mills	28 mills
Tax rate (Sep. School), 1918.....	30.6 "	34.15 "	36 "

*Year ending March 31, 1918

Urban Opportunities

Throughout the volumes of literature that have been published pertaining to the inducements offered to prospective settlers by the new provinces of Western Canada particular attention has been paid to the rural or agricultural phase. The one outstanding call has been for tillers of the soil. With a population that promises soon to reach the million mark it is evident that wide opportunities must present themselves to the manufacturer, the merchant, and the professional man. To what extent do the various cities, towns, and villages of Saskatchewan offer inducements to such classes? This is a broad

question and one worthy of careful investigation. When free grants of the world's choicest wheat lands were being handed out as inducements to settlers to take up their abode in this province there was no occasion for waiting to consider; one had merely to follow the crowd and take the first gift that lay in his path. There was but little choice. The land was uniformly all good and those who chose blindly were almost as sure of success as the most careful.

In the investment, however, of a large amount of capital the field must be more thoroughly examined and the location decided upon only after the most mature deliberation. Unsuitable locations and misdirected energy often result in failures that are otherwise entirely unwarranted. In early days it was said that the West might attain to great agricultural proportions but could not hope to succeed along industrial or manufacturing lines. This misconception is being rapidly dissipated and it becomes quite evident that the industrial and commercial activities of the province have every promise of keeping pace with its agricultural expansion. In proof of this assertion may be quoted as an illustration the remarkable success which has been achieved by the mammoth plant of the Quaker Oats Company since its establishment at Saskatoon. The tremendous volume of products annually yielded by the Saskatchewan farm offers unlimited opportunities to such industrial concerns as cereal mills, packing plants, creameries and canneries. When cattle were shipped alive to distant markets their hides only became available to the tanners at such distant points, consequently it was only natural that they should return to the province in the form of ready-made leather goods. The order of things is rapidly changing and as the abattoirs of the province increase their capacity the opportunity arises for tanners, harness makers, saddlers, shoemakers and other leather manufacturers to establish permanent and remunerative local industries. It appears only reasonable that many such products of the farm which return to it in various forms of manufactured articles might be so treated in closer proximity than is being done at present. Even should the cost of such process be more excessive than in distant centres the saving in time and money spent on freight is an offset of considerable proportions.

The products of the forest and lakes might be treated more thoroughly than at present. Sawn lumber and frozen fish are being shipped out of the province in great quantities, yet wooden boxes and canned fish are being imported. This suggests that wood-working industries might find lucrative fields in some of the towns adjacent to the timber areas and that avenues are open for the better utilization of the vast quantities of fish to be found in the northern waters. Large areas of swamp, muskeg, and bog found in the northern parts of the province might be made to support a large peat industry.

The mineral resources of the province are only beginning to be known and prominent among the possibilities is the outlook for gas and oil. At present unlimited opportunities for the manufacture of brick, fire-brick, tile and pottery are available in the extensive high-grade clay areas of the southern parts of the province where the vast adjoining lignite coal fields guarantee unlimited power for industrial purposes.

It has been demonstrated that the production of flax and wool can be most successfully carried on in all southern parts of the province. There is no real

reason why this raw material should not be locally manufactured into finished articles of wear. Only small fruits are grown in the province but these and vegetables of every description flourish most luxuriantly and would support any number of canneries. These are only a few random suggestions but they serve to illustrate that the manufacturing possibilities of the province are by no means to be ignored. Cheap power is of course an item of considerable importance and this has not been overlooked by any municipality. It has been made one of their most important considerations and an examination of this point will reveal the encouraging fact that the almost universal municipally-owned plants of the province have made provision for the supplying of power at exceptionally low figures.

The opportunities in the commercial world throughout the province are legion and need no enumeration. There is not a village, town, or city in the whole province that is not making rapid strides in keeping with the tremendous growth of the rural districts. Commercial houses of every description to be found in an agricultural country may safely depend on an ever-increasing volume of business which the certain expansion of the province in the coming years will guarantee.

To the professional man the attractions are none the less inviting. Many a young lawyer or doctor starting out in the world with nothing but his diploma and a burden of college debts has come to this province and found in one of the outlying new centres of settlement an opportunity to establish himself in humble quarters according to his scanty means where the outlook for rapid expansion dispelled the disappointment of being denied a more auspicious start. In a few years he has found himself beautifully located in a thriving town with a large and lucrative practice and a home surrounded by every comfort. It is not uncommon to find such men in a few years rising from their modest embarkations to the highest positions of public trust and responsibility. Many a member of parliament, city mayor, or other prominent official can point to such an experience.

The smaller towns and villages of the province, and hundreds of others which will spring up in the next few years, offer such opportunities to professional men of all callings, while the larger cities are becoming worthy of the presence of men of the highest degree of proficiency in their various callings. The growth of the educational department culminating in the provincial university has created a demand for school teachers, music teachers, lecturers and educationalists in general that scarcely existed at all a quarter of a century ago.

As the agricultural pursuits of the province are becoming more and more scientific and intensive so will the industrial activities of the cities become greater and the business and professional advantages be rounded out to greater completeness. It is evident that the province is about to witness a phenomenal expansion during the next quarter century and that its urban opportunities will be in keeping with its rural.

The remarkable advancement achieved by its seven cities is only a fair sample of the general forward trend of all its urban centres and rural districts. Another unfailing indication of its financial growth has been the establishment

throughout the province of numerous branches of nearly all the chartered banks of Canada. In 1905 there were 39 such banks in Saskatchewan. In 1918 the number had reached 480 in addition to 12 private banks. Bank clearings from these 480 institutions for the year 1918 amounted to \$368,631,391. The faith of the leading financial houses of Canada in the future of Saskatchewan's various municipalities is thus made manifest in concrete form by the establishment of these many branches. Further particulars of these banks are shown in the following table:—

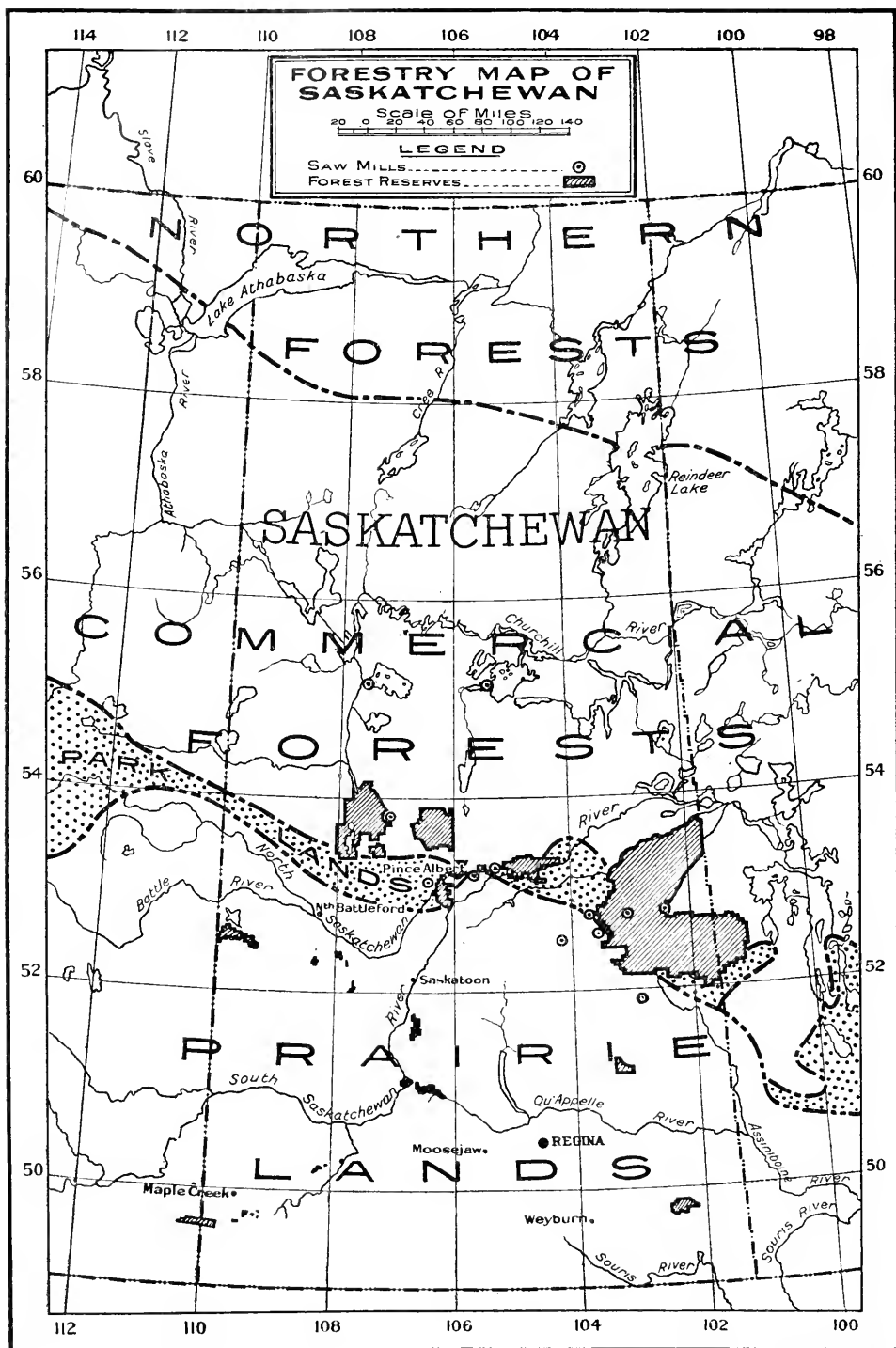
CHARTERED BANKS OF SASKATCHEWAN

Name of Bank	Head Office	Total Number of Branches in Saskatchewan
Commerce.....	Toronto, Ont.....	77
Dominion.....	Toronto, Ont.....	4
Hamilton.....	Hamilton, Ont.....	24
Hochelaga.....	Montreal, Que.....	4
Home.....	Toronto, Ont.....	7
Imperial.....	Toronto, Ont.....	21
Merchants.....	Montreal, Que.....	33
Montreal.....	Montreal, Que.....	41
Nova Scotia.....	Halifax, N.S.....	5
Ottawa.....	Ottawa, Ont.....	9
Royal.....	Montreal, Que.....	97
Standard.....	Toronto, Ont.....	14
Sterling.....	Toronto, Ont.....	2
Toronto.....	Toronto, Ont.....	22
Union.....	Winnipeg, Man.....	101
Weyburn Security.....	Weyburn, Sask.....	19
	Total.....	480

FORESTS AND WATER POWERS

To speak of the forests of a "prairie" province is somewhat of a paradox, yet the extent of wooded areas in Saskatchewan practically equals that of the unwooded when the province in its entirety is considered. The adoption of the term "prairie provinces" however, as applied to Manitoba, Saskatchewan, and Alberta cannot be wondered at when one considers that for a distance of some 800 miles, from east of Winnipeg to west of Calgary, the traveller crosses the southern parts of these provinces and sees only the vast undulating prairies of apparently endless magnitude. The whole of the southern part of Saskatchewan, from the International boundary line to Prince Albert on the North Saskatchewan river, some 300 odd miles in depth by a width of about 350 miles is practically prairie country. To be able to boast of this unbroken tract comprising over 100,000 square miles of fertile wheat land is wonderful, and to be able to add to it an equal area of forest land is amazing, yet such is the privilege of the province of Saskatchewan. As the settlement to date has been almost entirely within the former area the province is still to the public at large the "prairie" one and because of the predominance of its agricultural possibilities may ever remain so. The forests however, are no mean asset and their economic development is bound to assume definite form in the near future. The total dependence of the neighbouring prairies for wood supplies from other districts, of which the forest areas of the northern part of the province are most convenient and the unsuitability of much of this wooded district itself for any other purpose than forestry makes a double inducement for the stimulation of its productiveness in tree growth.

Lest this statement might be misconstrued to apply to the general forest wealth and resources as compared with the prairie possibilities it must be stated here that only in relation to certain areas can such be applied. Nearly the entire area listed under the "prairie" division comprises the most fertile of agricultural land, which, on being brought under cultivation, yields a vast wealth of grain and other farm products and supports a large population. On the contrary, the greater part of the area included in the "forest" division lies in those northern parts where neither the forest products nor the soil can be considered of any particular value. Taking the entire prairie division the percentage that might be termed "first class agricultural lands" is high, probably easily 90 per cent, while that of the "forest" division which could be rated as "commercially valuable" is low, possibly not over 25 per cent. In the cold and rocky regions of the northern parts of the province where the woods are inferior and inaccessible and the possibilities of agricultural development are out of the question, the real value of the forest is in connection with its advantageous influence on game and fur-bearing animals. Useless as a commercial asset the scrubby forest of the north makes an ideal preserve for such and supplies a sufficient quantity of shelter and fuel for the requirements of the few traders, trappers and prospectors, whites and Indians, who inhabit those regions. Except for a limited quantity of merchantable timber in the



Prepared in the N.R.I. Branch.

valley of the Clearwater river and about the shores of Lake Athabaska, that district north of the Churchill river may be included in this description.

Saskatchewan's area of valuable merchantable timber might be roughly described as comprising a belt extending from east to west across the central part of the province bounded on the north by the Churchill river and extending southerly to Prince Albert on the Saskatchewan river. From Prince Albert it extends in a southeasterly direction and reaching below the Saskatchewan river to the eastern boundary of the province while in the western part of the province it barely reaches as far south as this river. Within this belt are found such large rivers as Saskatchewan, Carrot, Torch, Sturgeon and Beaver, also Cumberland, Amisk, Candle, Montreal, Smoothstone, Dore, Cold, and Primrose lakes, Lac la Ronge and Lac la Plonge, on the lowlands surrounding which the heaviest timber is found.

This area has been only partially surveyed and the extent of the timber has not been determined with any degree of accuracy. The estimate of the Director of Forestry may be taken as the most authentic available at the present time. His figures have been deduced from extensive examinations of forest areas in various parts of the timber belt. Results of the examination of some eight of these areas comprising a total of 19,633 square miles are shown in the following table. The merchantable timber includes the six following species, spruce, poplar, jackpine, tamarack, birch, and balsam. Two columns are provided for each species, the first showing the lumber in board feet measure and the second showing in cord measure the balance of such species of merchantable size but not included as suitable for lumber. The equivalent of the whole in cord measure is then given.

SASKATCHEWAN FOREST SURVEY*

Survey	Area Sq. mi.	Spruce		Poplar		Jackpine	
		B. F.	Cords	B. F.	Cords	B. F.	Cords
Makwa.....	1,954	100,386,000	324,540	55,834,000	6,794,018	59,091,000	519,190
Three Rivers.....	3,136	705,000,000	1,000,000	280,000,000	5,184,750	15,600,000	728,250
Dore lake.....	2,455	319,385,900	151,990	83,041,000	2,295,455	.....	.....
Battleford.....	1,800	56,650,000	.....	.....	13,312,000	196,640,000	.....
Montreal lake.....	2,580	372,262,000	384,274	165,550,000	804,632	16,012,000	301,259
White Gull.....	3,754	253,937,000	124,336	194,272,000	1,525,781	40,922,000	1,742,774
Big river.....	1,800	140,141,600	549,504	8,243,800	7,514,072	8,243,800	82,944
Beaver river.....	2,154	102,000,000	.....	.....	3,248,355	36,462,500	.....
Totals.....	19,633	2,049,764,600	2,534,644	786,940,800	40,679,053	372,371,300	3,374,417

Survey	Area Sq. mi.	Tamarack		Birch		Balsam	
		B. F.	Cords	B. F.	Cords	B. F.	Cords
Makwa.....	1,954	.....	65,430	272,000	.....	.....	.....
Three Rivers.....	3,136	100,000,000	.....	.....	.....	.....	.....
Dore lake.....	2,455	600,000	89,000	.....	206,080	.....	.....
Battleford.....	1,800	.....	.....	5,149,000	.....	13,979,000	.....
Montreal lake.....	2,580	.....	57,413	11,834,000	169,797	1,843,000	.....
White Gull.....	3,754	.....	.....	.....	60,480	8,243,800	.....
Big River.....	1,800	.....	120,960	.....	.....	.....	.....
Beaver River.....	2,154	.....	.....	.....	.....	.....	.....
Totals.....	19,633	100,600,000	332,803	17,255,000	445,353	24,065,800	.....

	Spruce	Poplar	Jackpine	Tamarack	Birch	Balsam
Total..... B.F...	2,049,764,600	786,940,800	372,371,300	100,600,000	17,255,000	24,065,800
Total..... Cords.	2,534,644	40,679,053	3,374,417	332,803	445,353	.....
Total amounts expressed in cords	5,950,918	41,990,621	3,995,036	500,469	474,111	40,109

Summary :

Forest Areas examined.....	19,633 sq. miles
Lumber available.....	3,350,997 M.B.F.
Additional wood.....	47,366,270 cords
Total amount of wood expressed in cords.....	52,951,270 cords

* Forestry Branch, Department of the Interior

The average square mile in this area contains the following quantities of wood:

Spruce.....	303.1 cords
Poplar.....	2,138.2 "
Jackpine.....	203.5 "
Birch.....	24.1 "
Balsam.....	2.4 "
Total.....	2,696.8

This equals a little better than a total supply of 4 cords per acre.

It is also interesting to note that the examiners of this area report the conditions of the surface as follows:

Timbered.....	41 per cent
Burn.....	18 "
Muskeg.....	33 "
Grassland, Water, etc.....	8 "

Based on the results found from this examination, from other examinations not included in these figures but which bring the total area examined up to 27,514 square miles, and on general reports covering the balance of the area included in the total estimate, the area of forest lands of commercial possibilities in Saskatchewan is estimated to be 45,000 square miles. The estimated total yield in cords is given as follows:

Spruce.....	13,639,500 cords
Poplar.....	96,219,000 "
Jackpine.....	9,157,500 "
Tamarack.....	1,147,500 "
Birch.....	1,084,500 "
Balsam.....	108,000 "
Total.....	121,356,000 "

Taking the same ratio between the total yields in cords and the available lumber supply on the area examined and applying it to the total estimated supply in cords we find that about 8 billion feet of lumber may be expected from Saskatchewan. Other estimates place it as high as 14 billion feet. What-

ever the correct figures may be the fact remains that the amount is considerable, the area very extensive and the possibilities for the development and practice of commercial forestry on a paying basis are very encouraging.

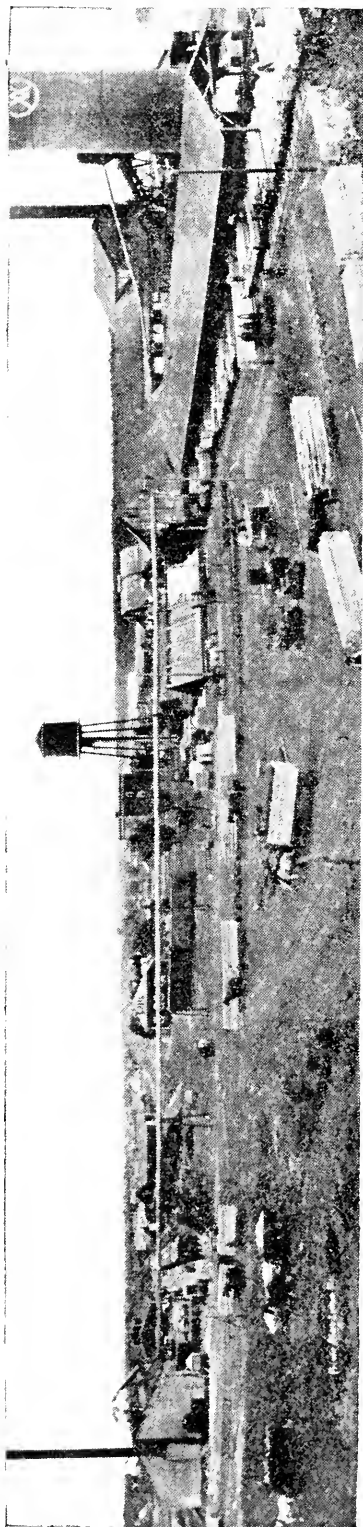
Species and Occurrence

The forest species of Western Canada, particularly of the prairie provinces, are much less numerous than those of Eastern Canada. This applies to both coniferous and deciduous varieties, especially of the latter. However, in the province of Saskatchewan, some 20 odd species of trees are to be found. This is considerably more than it has been generally credited with though the number of valuable woods included in the list is small. Only about 6 or 7 species are of commercial value and about 4 of these suitable for the manufacture of lumber. In fact, only one species, namely, the white spruce, can be classed among the leading commercial timbers of the world, but fortunately it is widely distributed, fairly plentiful, and grows to perfection in these districts. The spruce supplies more lumber and has a larger total value than any other wood in Canada. The species found in the province and their relative commercial value are shown in the following tables:

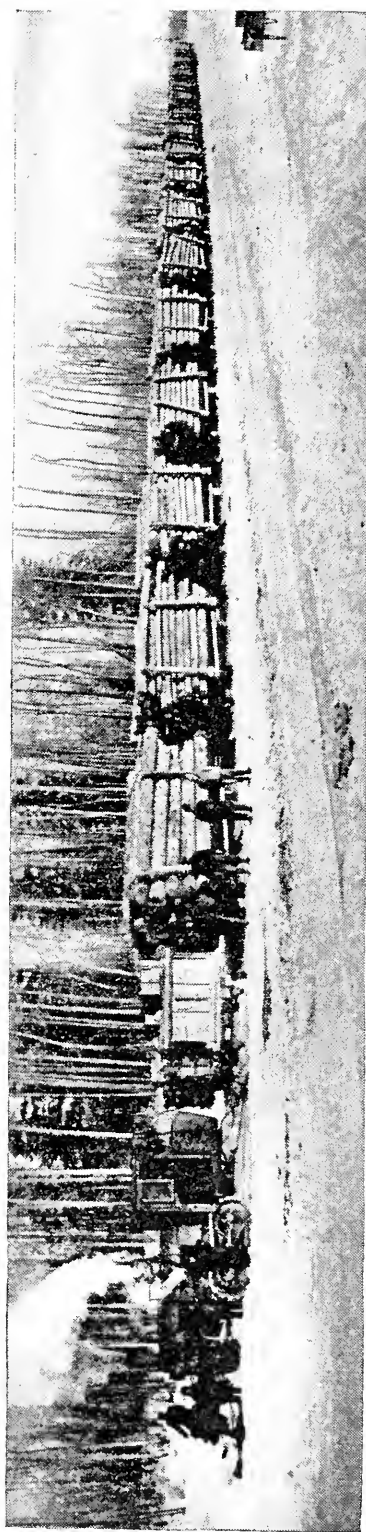
Trees Found in Saskatchewan

Common Name	Botanical Name
Alder.....	<i>Alnus</i>
Ash, green.....	<i>Fraxinus pennsylvanica</i> var. <i>lanceolata</i>
Ash, Mountain.....	<i>Pyrus americana</i>
Aspen.....	<i>Populus tremuloides</i>
Birch, Alaska.....	<i>Betula Alaskan</i>
Birch, White.....	<i>Betula alba</i> var. <i>papyrifera</i>
Cherry, Bird.....	<i>Prunus pennsylvanica</i>
Cherry, choke.....	<i>Prunus virginiana</i>
Cottonwood.....	<i>Populus deltoides</i>
Cottonwood, Narrowleaf.....	<i>Populus angustifolia</i>
Elm, White.....	<i>Ulmus americana</i>
Fir, Balsam.....	<i>Abies balsamea</i>
Maple, Manitoba.....	<i>Acer Negundo</i>
Oak, Burr.....	<i>Quercus macrocarpa</i>
Pine, Jack.....	<i>Pinus Banksiana</i>
Poplar, Balsam.....	<i>Populus balsamifera</i>
Spruce, Black.....	<i>Picea mariana</i>
Spruce, White.....	<i>Picea canadensis</i>
Tamarack.....	<i>Larix laricina</i>
Willow.....	<i>Salix</i>

Fires have played great havoc with the forests of the province and only comparatively small areas of virgin timber are to be found. In fact evidence is found to show that much, if not all, of the prairie section was at one time covered by trees. Extensive fires are known to have occurred about 50 years ago, while many large areas in the central part of the province have been partially burnt over every 15 or 20 years. Were it not for the destruction wrought by these fires the timber supply would be infinitely greater than it is.



Prince Albert Lumber Company's Mills at Prince Albert.



Prince Albert Lumber Company's Logging Train.

Generally speaking the superficial attractions of the forests of Saskatchewan are disappointing. A rude awakening is due the holiday seeker who goes into these woods with visions of sylvan glades and grassy slopes covered with flowers beneath the overspreading branches of majestic trees. Except in the park lands of the province, where the small type of poplar predominates, the forests are monotonous and uninviting. The sandy ridges of jackpine may be travelled with a fair degree of ease but they have little else to commend themselves to the lover of nature. The rocky hills of the north present a more diversified outlook and furnish a very attractive holiday region. The areas producing the largest and most valuable timber, chiefly spruce, are for the most part low-lying, wet, and forbidding. The muskegs of these regions rob a tramp through the woods of all its enjoyment, while the tangles of underbrush and maze of shallow lakes or sluggish channels of the many streams that wind their tortuous courses through these great flat areas often make summer travel impossible. Yet the magnificent stands of white spruce found scattered all through such districts are well worth seeing, be the journey to reach them ever so trying. Winter roads are easy to construct and a certain amount of draining will improve summer conditions. The following random notes gathered from reports of foresters who have examined scattered areas throughout the district will serve to illustrate the nature of these woods.

On the east side of Montreal lake a good stand of white spruce and poplar is to be found covering some 13,250 acres and estimated to amount to about 120,000,000 feet. This area has been classified as consisting of 30 per cent in the pole stage, 35 per cent burns, 8 per cent timber, 20 per cent muskeg with jackpine knolls and 7 per cent lakes. The spruce-poplar type forms an interesting study. Following the destruction of a spruce stand by fire, a reproduction of poplar first takes place, followed by the spruce, which eventually forms such a dense shade as to gradually kill out the poplar and once more predominate.

Reporting on this area the examining forester says "Undoubtedly this area is strictly forest land and for the most part would be a profitable producing one if under efficient forest management." He estimates that the entire district will shortly be all reforested with the valuable white spruce. Virgin stands of this species have been found 200 years old and already on the decline, as maturity is reached at about 125 years when the tree will measure from 16 to 30 inches diameter breast high. The white spruce grows best on flat, well-drained areas adjoining lakes and rivers.

In the true sphagnum muskeg on the eastern end of the Pasquia Hills 456 black spruce trees and 80 larches to the acre were found with diameters varying from 2 to 6 inches, the average being 3, and the average height being 25 feet. As the average age of these species was 70 years the stunted growth of the muskeg type is very evident. By draining these low lands there is no doubt that such unprofitable species might be replaced by the more valuable white spruce.

Remarkable successes have been achieved by certain countries that have given serious attention to the commercial exploitation of their forests on a scientific basis having regard to the future supply as well as to the present. The case of Sweden is worthy of examination. Sweden's forest areas are about

the equal of Saskatchewan's and the climatic and soil conditions are very similar. By an extensive forestry enterprise under government control the annual value of her forest products have been made to exceed one hundred million dollars. There is no real reason why Saskatchewan should not eventually emulate the example of this enterprising nation.

In the survey of the Pasquia Hills and Carrot river regions the white spruce was found to be confined mainly to the high lands of the plateau and the dry regions and knolls of the Carrot river plain and is well adapted to the boulder clay soil and the climate of these regions. It is generally found in a mixture with the poplar. The black spruce is found almost entirely in low, wet situations, the muskeg type being usually very stunted. It also grows on the eastern base of the Pasquia Hills. Jackpine flourishes on sandy ridges and knolls and reproduces with a most surprising rapidity following fires. Tamarack is found mixed with black spruce in swamps and muskegs but has been the prey of forest insects which have nearly annihilated the species. Paper birch and white birch are well distributed and grow to a large size on Carrot and Fir rivers. Scattered specimens of balsam fir are found on the banks of Carrot river. Elm and green ash are found on the soft, alluvial mud banks of Carrot river while Manitoba maple and mountain ash are scattered on the high lands. Willows and alders are found on nearly all wet river flats.

In the Cumberland lake district there is a limited supply of white spruce restricted to the well-drained tracts of flat land averaging in size from 12 to 26 inches diameter, breast height. The muskegs and low wet lands produce a scattered supply of black spruce while on the limestone ridges and sandy soils a coarse growth of jackpine is found. On Redwillow river near its junction with the Carrot, blocks of white spruce have been examined which will average from 10 to 15 thousand board feet per acre. North of Torch river and between Candle lake and the Sturgeon-Weir river there are said to exist extensive areas of white spruce and jackpine. These represent only a few random areas, and there is no reason to doubt that a thorough cruising of Saskatchewan's forest areas will prove the existence of a much greater supply than has been generally believed to exist. The many lakes and rivers found throughout the wooded part of the province and numerous water powers available on the Churchill and its tributaries and on the Sturgeon-Weir will make the driving and manufacturing of the forest products a practical possibility.

The chief forest types have been classified as poplar, spruce, muskeg, and jackpine. The examination of an acre of the poplar type including all trees of 2 inches diameter breast high and over gave the following result:

Total number of sticks 400, being comprised of:—

Balsam poplar	61	per cent	Average Diameter Breast High, 9 inches	
Aspen	30	"	"	5 "
Willow	6	"	"	3 "
White Birch	3	"	"	5 "

The ground covered was mainly Hazel, comprising:—

Hazel	75	per cent.
Rose	10	"
Cranberry	5	"
Cherry	4	"
Raspberry	4	"
Aspen	1	"

Spruce types grow in scattered patches all through the district and are usually associated with poplar. A sample acre of the jack pine type showed some 300 sticks of which 61 per cent were jack pine, 24 per cent white spruce, 5 per cent paper birch, and 5 per cent poplar.

Lumbering Industries

As an indication of the extent of lumbering operations in Saskatchewan the figures for the year 1916 are given in the following statement.

SASKATCHEWAN LUMBER, 1916

Kind of wood	Quantity cut	Average value
	M.Ft. B.M.	per M.Ft. B.M.
		\$
Spruce.....	84,134	14.11
Tamarack.....	61	17.95
Poplar (Aspen).....	59	14.02
Jack pine.....	21	17.86
Total lumber cut.....	84,275	.....
Total value.....		1,189,351
	M.	
Total lath cut.....	25,061	.....
Average value.....		1.47
Total value of season's cut.....		\$1,226,119

SAW MILLS IN OPERATION, 1916

Owners	Location
Albert, J. B.....	Prince Albert
Blackburn, H.....	Bannock
Hawke, E., & Son.....	Hudson Bay Junction
Joyce, Jno. W.....	Chagoness
Ladder Lake Lumber Co.....	Big River
Nugent, Andrew.....	Steep Creek
Palm, Gustav.....	Shellbrook
Prince Albert Lumber Co., Ltd.....	Prince Albert
Saskatchewan Lumber Co., Ltd.....	Crooked River
Shaw, Chas.....	Bjorkdale
Studlin Bros.....	Hazel Dell
Turnbull & Barnum.....	Peesane

Of these mills only two made cuts exceeding 20 million feet during the year. They were The Prince Albert Lumber Company and The Ladder Lake Lumber Company, whose cuts were derived from the district to the northwest of Prince Albert, about Sturgeon and Big rivers and Cowan lake. The above list of sawmills, however, omits a large consumer of Saskatchewan's white spruce, namely The Finger Lumbering Company of The Pas, Manitoba, who annually cut some 15 million feet, most of which is obtained from the Carrot river and Sipanuk Channel valleys. There are no pulp mills in Saskatchewan though according to the estimate shown on the accompanying table there is a considerable supply of raw material available.

The cut will be seen from these figures to be only small compared with heavily wooded areas but is much greater than has been generally believed possible for a "prairie province." The industry has proven a boon in many ways, providing lumber and lath for local use when other sources of supply are far distant, in giving work to homesteaders during the winter months and in opening up many new agricultural sections adjacent to the heavier woods. There are still large tracts of standing timber of good mill dimension which will guarantee several years cut. The commercial practice of forestry will keep up a yearly supply of limited quantity. The evolution of the frontier sawmill, however, into a plant of more detailed wood-working nature, including the making of pulp, is necessary to maintain its industrial growth and development.

Forestry

Certain areas of wooded lands have been reserved from settlement and set apart by the Dominion government for forestry purposes under the management of the Forestry Branch of the Department of the Interior. In Saskatchewan they comprise an area of nearly ten thousand square miles and lie chiefly within the central forest belt and adjacent to the Saskatchewan river. They may be classed in a twofold manner, namely, reserves of areas especially productive of the valuable species of dimension lumber, chiefly white spruce, and reserves in which the land is unfit for agricultural purposes, and the forests thereon though of little commercial value at present, represent the most likely return that may be hoped for eventually. In the latter list are included some small reserves in the prairie section consisting of sand hills and other waste area which it is hoped can be successfully reforested. Jack pine flourishes on sandy land and if nothing more valuable than cord wood or fence posts are produced it is infinitely better than nothing and a boon to the adjacent farming areas. The importance of conserving the woods of the province cannot be over-estimated when it is realized that not only in the prairie regions of Canada but throughout the whole Dominion and the continent of North America the shortage of forest supplies is becoming acute. By making sand ridges, which would otherwise become deserts, produce their quota of wood supply, however meagre, a decided gain has been effected, while in the control of systematic cutting in the reserves and the protection from fire afforded by the regular patrols, the supply can be made to go considerably farther even if some of such areas are eventually yielded up to the tillers of the soil.

Further there must be taken into consideration the beneficial effects of forests on climatic conditions, water supply and the protection of game. Everyone

knows the value of a "windbreak" of trees sheltering the home. To the scattered "bluffs" of small woods intervening between the open prairies and the heavier wooded districts is due the remarkable degree of success which has accompanied the efforts of the "mixed" farmer. The shelter that stock derive from these occasional woods is incalculable. Any farmer who realizes this value will readily relinquish a few acres to be set apart as "shelter." It may be taken for granted that the time is coming when the whole aspect of the prairies will be changed by the process of tree planting. Windbreaks set out with the primary object of sheltering the house and barns can be made quite attractive and will add much to the value of the farm in actual dollars and cents. In the lee of the larger and coarser trees, which break the force of the wind, smaller ornamental trees and flowering shrubs will thrive, and by their decorative and attractive qualities relieve the monotony of their sombre surroundings. Congregating in the sunny haven thus afforded, flocks of birds take up their abode and entertain their benefactors by continuous renderings of the sweetest of music.

Enticed by the promising situation for a flower plot the housewife finds courage to plant again the seeds so often sown in the old garden "back home", which now, protected from the strong blasts that sweep across the prairies, surprise her by their wonderful response to the fertility of the soil and exceed any success she ever attained in those bygone days. Many a home has been transformed in this manner from a desolate landmark on the broad monotonous prairies to a smiling, inviting paradise, that sheds a radiance of cheer in every direction. There is no life so full of health and happiness as that of a woman's in a real "farm home" and no place where the boy can grow up into more complete manhood and find a better sphere of usefulness and opportunities awaiting him than in the country. The planting of trees and flowers on a farm located in the prairies is one of the surest ways of making the home the most attractive place on earth.

But not only for its aesthetic or sentimental objects should this work be carried out. In the many ways that groups of trees benefit the farm it becomes a matter of policy to set them out. Not only does their shelter protect the buildings and stock but also the growing crops. Observations made by the Superintendent of the tree planting division at Indian Head have led him to the conclusion that the protective influence of a belt of trees on the adjacent growing crops amounts to about 50 feet in width for every foot in height of the trees. That is a row of trees 15 feet high will give a valuable shelter for 750 feet out into the adjoining grain fields. Farmers whose fields contain various clumps of trees recognize their value as winter shelter and in threshing the grain arrange to have the straw piles placed on the south sides of such clumps. Here during the coldest days of winter the cattle may be found feeding and contented.

In the matter of supplying wood for fuel these plantations can be made quite profitable. The coarser varieties, such as Russian poplar, grow very rapidly and six years after setting out an acre of young shoots a summer's supply of stove wood can be cut. Other varieties will provide fence posts and poles, which are always in demand on a farm, but will require longer to develop. However, it is possible, in the majority of cases, by planting two or three acres of a mixture of varieties of western trees to secure in ten or fifteen years a permanent source of supply of fire wood, poles, and posts sufficient to meet the ordinary requirements

of the farm from year to year. The initial expense is small though it entails considerable work, but the time saved when returns come in more than repays the trouble. Railway companies have found that the planting of shrubs as wind-breaks along their right of way to stop the snow from drifting over the tracks has proved a success. Rural municipalities will find that beneficial results can be obtained by protecting roads in the same manner, also in retaining embankments and in beautifying the landscape.

It is to be hoped that the practice of planting will extend to every rural home and municipality. Odd corners in fields, broken lands in ravines, scrubby or other worthless areas can be turned into the most valuable parts of the farm if trees can be induced to cover them. Experiments made in various sections throughout the whole province have met with an almost universal success. Except in a very dry season seedlings start well and once on the way grow very fast.

The Forestry Branch maintain a tree planting division at Indian Head, under the charge of a resident superintendent. The efforts of this division have so far been principally confined to the planting of windbreaks and wood lots with considerable success. Experimental plots have been tried, though on a small scale. Some 4 acres in the Elbow reserve and 25 in the Spruce Woods reserve of Manitoba as well as a few acres in the Pines reserves near Prince Albert are all meeting with good success. On the Pines reserve, which is almost pure sand, white spruce seedlings have been tried, as well as jack pine and lodge pine, and all have been found to do well. It thus appears possible to produce the valuable white spruce as well as the coarser trees on this class of land. The province has a wide opportunity to increase its forest wealth. The reserves with their areas in square miles are shown in the following statement. Their locations are shown on the accompanying forestry map.

FOREST RESERVES IN SASKATCHEWAN

Reserves	Area in square miles
Moose Mountain.....	156
Beaver Hills.....	99
Duck Mountain.....	81
Porcupine No. 2.....	3,246.75
Pasquia.....	2,615
Fort a la Corne.....	513
Steep Creek.....	7
Pines.....	166.15
Nisbet.....	149.49
Sturgeon.....	729
Big River.....	1,342
Seward.....	30.75
Elbow.....	119
Dundurn.....	63.25
Keppel.....	86.25
Manito.....	179.65
Cypress Hills (2).....	97.50
Total.....	9,680.79

The administration of the affairs of the Forestry Branch in Saskatchewan is in charge of a local District Inspector, whose headquarters are located at Prince Albert. His officers include an Assistant District Inspector, a Forest Supervisor with Forest Assistants and a Forest Ranger in charge of each reserve. In the protection of the woods from fire he is assisted by a staff of Chief Fire Rangers with Forest Rangers on the reserves and Fire Rangers outside. Good work is being done in protecting the forest from fires, the patrols of the fire rangers taking them throughout the wilds of all the wooded areas. The care now exercised by the Indian tribes who inhabit these regions, and the few whites who travel in them, in the extinguishing of their camp fires is a marked tribute to the thoroughness of this work. The enforcing of proper cutting and brush-burning methods by lumbermen is also having its effect, though outside the reserves it is not practised to the same degree. Roads, trails, and shelters are being built throughout the reserves with residences for the rangers, look-out towers, telephones, and other improvements. Nearly all the reserves are wholly or in part game sanctuaries. A good work is under way and it is hoped its scope will be enlarged. Outside the reserves the forest lands are administered by the Timber and Grazing Branch of the Department of the Interior of which the various Dominion Land Agents are the local officers.

*Water-Powers

The population of Saskatchewan and its commercial and industrial life is at present almost wholly located in the prairie or southern portion of the province, there being no cities or towns and very few settlements north of the North Saskatchewan and Saskatchewan rivers. This has an important bearing on the development of the provincial water power resources.

The greatest natural resource of Saskatchewan lies in its soil; this province being the largest grain-producer in Canada. Forestry, coal, minerals and water power form other natural resources awaiting exploitation. The water powers are situated chiefly in the northern section of the province and their distance from the present centres of population renders their early development more feasible in conjunction with the development of the other nearby natural resources rather than for the purpose of transmission to present industrial centres. The further settlement of the province and particularly the development of its northern territory assure a full future utilization of the extensive water power resources available. At the present time the development of one or two power sites on the northern rivers is contemplated in conjunction with the development of the Mineral Belt of Northern Saskatchewan and Manitoba.

Engineers of the Dominion Water Power Branch of the Department of the Interior have investigated the power possibilities of all the more important power rivers within the range of early prospective development including the North Saskatchewan and Saskatchewan rivers, the Sturgeon-weir river, and the Kettle, Island and Bloodstone Falls sites on the Churchill river. It is the policy of this Branch to progressively and systematically continue these investigations and study the power possibilities of each stream so that accurate data in each

*Data for the section on water power was compiled by Mr. C. H. Attwood of the Dominion Water Power Branch Chief Engineer in charge of the Alberta and Saskatchewan power surveys

district may be available when required, and the exploitation of natural resources be not retarded by the lack of complete basic information.

The lack of stream flow and power data in the northern portion of the province makes it impossible, at the present time, to completely and finally compile the water power prospects in a satisfactory manner. However, in order to bring the data up to date the Dominion Water Power Branch is just completing a report which summarizes the undeveloped powers of the province as at present estimated from all data available. The report gives a brief write-up of the more important rivers together with an estimate of the possibilities of each power site and will probably be published in the near future. In the meantime information relating to any particular river or power site may be obtained by applying to the Director of Water Power.

The following table summarizes the water power available in Saskatchewan but is subject to revision as later data becomes available.

SUMMARY UNDEVELOPED WATER POWER, SASKATCHEWAN

River	Horse-power at 80% Efficiency		Remarks
	Ordinary Minimum Development	Estimated Maximum Development	
Beaver.....	785	2,300	Grand Rapids
Black.....	72,559	217,902	
Churchill.....	311,150	582,415	
Foster.....	906	2,728	
Geikie.....	2,450	7,359	
Mudjatic.....	575	1,732	Cole Falls
Rapid.....	5,927	15,750	
Reindeer.....	93,070	106,560	
North Saskatchewan.....	3,439	14,800	
Saskatchewan.....	72,240	350,750	
Sturgeon— weir.....	5,660	9,695	
	568,761	1,311,991	20,000 H.P. with Churchill diversion

MINERALS

The mineral resources of a country may be classified under two distinct headings, namely, metallic and non-metallic. Under the non-metallics are sometimes directly included such materials as sand, clay, stone and similar substances and their manufactured products. These may not appear at first in the popular sense as "minerals," yet they are technically rocks and belong to the mineral kingdom, and are rightly classed as non-metallics. It has become a common practice, however, to make a separate division of such non-metallic products and classify them under a third heading as "structural materials and clay products." The minerals of Canada may therefore be classified under these three headings, namely:—

- I. Metallic Ores
- II. Non-metallic Products
- III. Structural Materials and Clay Products

The total value of the mineral production of Canada for the year 1916 was over \$177,000,000. In 1906 it was about \$80,000,000, in 1896 about \$22,500,000 and in 1886 only slightly over \$10,000,000. Thus in 30 years the value has increased from 10 to 177 millions of dollars.

The province of Saskatchewan, however, has played a small part in the mineral production of the Dominion. Farming, not mining, has been her forte, and her fields of golden grain have been the means of bringing more wealth to her people at large than many literal gold fields have ever accomplished. Her broad prairies, smiling under sunny skies, and flashing prophetic visions of vast roaming herds of "high grade" cattle or rustling fields of "golden" grain have enticed men's thoughts from wild stampedes into problematical gold fields and have turned them to more peaceful and certain avenues of riches. The environments of the prairies themselves are foreign to thoughts of mining activities, which are usually associated with districts of more rugged physical character. Be that as it may, for long years mining has received but little attention in this province. Like many other mistaken ideas regarding the greatness of our natural resources, wherein too much has been "taken for granted" a general opinion has gone abroad that the prairies and mineral resources are not to be considered simultaneously. In this respect it would appear that too little may have been taken for granted.

It has been said that necessity is the mother of invention. Such appears to be the case in connection with the mineral situation of Saskatchewan. When settlement spread over the open, treeless prairies, the necessity of securing fuel arose and the lignite coal fields of the southern part of the province were discovered and opened up. When towns and cities began to grow up, building material became an urgent necessity, and forthwith the clays of the province were found to be admirably suited for the making of brick. These contributions from classes two and three, namely fuel from the non-metallic products division and brick from the structural materials and clay products division, constitute the amount of Saskatchewan's share in mining activity to date. It represents

only a small share of the total for the Dominion. For the year 1916 the value was only about \$590,000, or 0.33 per cent of Canada's total. During the last ten years it has made but little increase though in 1912 it exceeded one million dollars, only to fall off again to less than half that amount in 1915. The following table shows the value of the yearly mineral production for the province of Saskatchewan and for the whole of Canada during the ten years from 1907 to 1916.

*MINERAL PRODUCTION

Year	Saskatchewan	Canada
	\$	\$
1907.....	533,251	86,865,202
1908.....	413,212	85,557,101
1909.....	456,246	91,831,441
1910.....	498,122	106,823,623
1911.....	636,706	103,220,994
1912.....	1,165,642	135,048,290
1913.....	881,142	145,634,812
1914.....	712,313	128,863,075
1915.....	451,933	137,109,171
1916.....	590,473	177,201,534

*Compiled from data furnished by Mines Branch, Department of Mines, Ottawa—

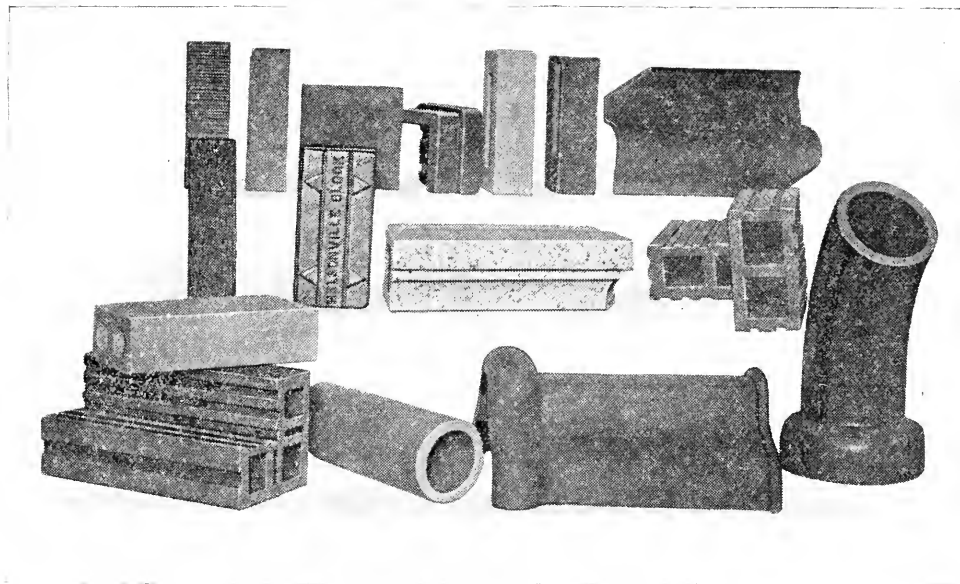
Details of the value of the mineral production of the province for the year 1916 are shown on the following table.

*MINERAL PRODUCTION OF SASKATCHEWAN—1916

Product	1916	
	Quantity	Value
		\$
Coal..... Tons	281,000	441,836
Clay products.....		78,668
Sand-lime brick..... No.	990,000	9,890
Other products.....		60,079
Total.....		590,473

*Compiled from data furnished by Mines Branch, Department of Mines, Ottawa—

This scanty production must not be taken as an indication of the possibilities of the province respecting mineral activity. As already noted the energies of the province have so far been almost entirely directed along agricultural lines. Two factors will tend to greatly stimulate efforts along mining lines, namely, the constantly increasing demand for these products themselves, such as coal for instance, and the awakening realization of the possibilities that may lie dormant in such hidden resources. Especially is this true of the great hinterland of the province of which so little is now known, even by the provincial



(A & B) Saskatchewan Clay Products.

officials and people themselves. The experiences of the adjoining provinces cannot but be an inspiration. Alberta, to the west, is finding unlimited stores of coal, oil, gas, tar and other mineral products. On the east, Manitoba, until recently considered a grain-growing province only, now appears in the role of a mining country because of several encouraging finds of various valuable metallic ores within her limits. It is reasonable to suppose that Saskatchewan might also be favoured with a fair share of mineral resources.

The minerals of Canada offer a wide range for the prospector. In addition to the non-metallic products, which so far have constituted the extent of Saskatchewan's output, are many valuable metallic ores, the presence of which in greater or lesser quantities are known to exist in the northern part of the province. The following table contains a list of all the minerals of Canada recently produced in commercial quantities. Those found in Saskatchewan are indicated by a single asterisk in case of prospects or undeveloped deposits, and by a double asterisk where commercially utilized.

MINERALS OF CANADA.

I. Metallic Ores:—

Aluminium	Molybdenum
Antimony	Nickel
Cobalt	Platinum and Palladium
*Copper	*Silver
*Gold	Tin
*Iron	Tungsten
Lead	Zinc
Mercury	

II. Non-metallic Products:—

Abrasive materials:	*Gypsum
Corundum	Magnesite
Grindstone	Manganese
Tripolite	Mica
Actinolite	Mineral pigments:
Alunite and Pyrophyllite	*Ochres
Arsenic	*Mineral Water
Asbestos	*Natural Gas
Barytes	*Peat
Chromite	*Petroleum
**Coal	Phosphate
**Coke	Pyrites
Feldspar	*Quartz
Fluorspar	*Salt
Graphite	Talc

III. Structural Materials and Clay Products:—

*Cement	**Lime
Clay Products:	**Sand-lime brick

**Bricks	**Sand and gravel
**Fireclay	*Slate
*Pottery	**Stone
**Sewerpipe	
**Tiles, etc.	

Economic Geology

Before a search for minerals can intelligently be made a general knowledge of the geology of the district in which such search is proposed is required. The geologist, the prospector and the miner must work in the order named. Geological explorations and examinations of various parts of the province have been made by a number of officials of the British and Canadian Governments at periods extending over the past sixty years. Prior to the acquisition of "Prince Rupert's Land" in 1870 by Canada, the lands now comprising this province were directly under the control of the British Government, who sent out a few geological expeditions to report thereon. Since 1870 the mineral resources of the West have remained under the control of the Federal government at Ottawa. Under their direction several members of the Geological Survey of Canada and of the Mines Branch have carried on the work and their reports constitute practically our entire knowledge of the geology of this province. What is needed to stimulate local interest is some educative action by the provincial government or the University. The University of Manitoba has a Department of Geology and Mineralogy—and what is perhaps of more immediate practical value—extension classes in elementary studies of these subjects for prospectors and miners. The publications of the Federal departments at Ottawa are augmented by various pamphlets issued locally. A campaign of newspaper publicity has also been enlisted with the result that serious efforts are now being made to create a paying mining industry. The University of Saskatchewan has not yet undertaken such work though the advantage and possibilities of such are obvious.

Perhaps the earliest explorations of a geological nature conducted over areas now embraced within the boundaries of this province were made in 1857-58-59 by James Hector, Geologist on the Palliser expedition sent out by the British Government for the exploration of British North America. His reports are published in the journals and papers relative to Captain Palliser's exploration in British North America and are contained in the British Parliamentary papers for 1859-60, 1863, and 1865.

In 1857-58 H. Y. Hind led geological parties for the Canadian Government on work very similar to that done by Hector. He travelled, by way of the Souris, Assiniboine, and Qu'Appelle rivers, as far as the elbow of the South Saskatchewan river. His reports are contained in the Legislative Assembly Publications, Toronto, for the years 1858-59, and are also published separately in two volumes, "Narratives of the Canadian Red River Exploring Expedition of 1857" and "Assiniboine and Saskatchewan Exploring Expedition of 1858."

In 1873-74 G. M. Dawson was attached to the British North Boundary Commission, as naturalist. His "Report on the Geology and Resources of the

Forty-ninth Parallel from the Lake of the Woods to the Rocky Mountains" is an exhaustive treatise on the physical geography and geology of the district covered.

Following the acquisition in 1870 by the newly confederated Dominion of Canada of Prince Rupert's Land, the investigations of the Geological Survey of Canada, and later of the Mines Branch of the Department of Mines, was extended into these regions. The reports of these investigations constitute a wealth of information pertaining to the geology of the prairie provinces. In fact, so far as Saskatchewan is concerned, such reports are practically the only literature available pertaining to such studies.

In 1873 A. R. C. Selwyn crossed the prairies from Fort Garry (Winnipeg) to Rocky Mountain House. His report contains observations of geological formations en route. In crossing Saskatchewan he followed the Qu'Appelle valley for some distance, then crossed the South Saskatchewan river and struck northerly to the north branch of this river, which was ascended westerly, leaving the province at Fort Pitt. In the same year Robert Bell travelled along the valley of the Qu'Appelle westward to the elbow of the South Saskatchewan on a similar geological expedition.

In 1875 R. W. Ells conducted boring operations on the prairies. Borings to ascertain the extent of coal areas and the possibility of securing water supplies for domestic purposes were made in the vicinity of Fort Ellice on the Assiniboine and on Swan river near Fort Pelly. In the same year Prof. J. W. Macoun reported on the flora of the western prairies.

In 1879-80 the reports of G. M. Dawson on his examination of the lignite tertiary formation from the Souris river to the 108th meridian were republished by the Geological Survey. These examinations were further augmented by borings conducted by A. R. C. Selwyn in 1880. During the latter year Robert Bell carried out extensive examinations in the more north-westerly slopes of Hudson bay, while his assistant, A. S. Cochrane, made exploratory surveys on the Saskatchewan river and northerly from Cumberland House to Pelican Narrows and Frog portage, on the Churchill river, and thence across Reindeer lake to Du Brochet post.

In 1882-83 Robert Bell made further extensive explorations in the basin of the Athabaska river, including the Clearwater valley and the headwaters of the Churchill and carried out exploratory surveys to connect with those made by his assistant two years previous. In 1883-84 R. G. McConnell examined the Cypress Hills, Wood Mountain and adjacent country. In 1892 J. B. Tyrrell and D. B. Dowling made an extensive exploration of the country lying between Lake Athabaska and Reindeer lake, covering an area of about 40,000 square miles.

In 1896 another extensive exploration was made by J. B. Tyrrell of the country drained by Grass river, which is now known as the Northern Manitoba and Saskatchewan mining districts. In his summary report Tyrrell wrote: "This area of Huronian rocks, extending about 75 miles from east to west

and an unknown distance towards the north, presents a good field of exploration for the prospector for gold and other precious metals on account of the number and variety of eruptive masses that break through it, surrounded by zones of highly disturbed and fissured rocks." Twenty years later he revisited these districts and witnessed the confirmation of his early suggestions of discoveries of the valuable minerals. This work, commenced by him in 1896, was completed by D. B. Dowling in 1899, who extended it westerly to include the Amisk Lake district north of Cumberland House.

In 1902 D. B. Dowling examined and reported on the coal fields of Souris river. In 1905-06 R. Chalmers spent the summer in an examination of the surface geology of Manitoba, Saskatchewan, and Alberta. During the summer of 1906 Prof. J. Macoun made an examination on the botany of the country on both sides of the Grand Trunk Pacific Railway across the province of Saskatchewan. Besides noting the agricultural possibilities of the district he paid attention to the natural history and secured a valuable collection of plants, birds, and mammals.

William McInnes in 1907 made a topographical and geological exploration of the country south of the Saskatchewan river, particularly in the Pasquia Hills and lower Carrot River region. Further examinations of the lignite coal areas of the prairie provinces were made in 1908 by D. B. Dowling, while the same year William McInnes conducted geological explorations on the Churchill river. The following year his work on the Churchill river was extended, including also the neighbourhood of Lac la Ronge, Nemeiben lake to the west, and Wapawekka lake to the east. Non-metallic deposits of lignite, glass sand, and magnesian limestone are mentioned as being noticed in these regions. He further extended the work in 1910 to include the district north of Cumberland House. In this year H. Ries and J. Keele commenced an investigation of the clays and shale deposits of the western provinces, which extended over several years. The results of their findings have been published in five volumes.

More recent work includes an exhaustive examination by Bruce Rose of the Wood Mountain-Willowbunch coal area. N. B. Davis in a report of the clay resources of eastern Saskatchewan, issued by the Mines Branch, gives the results of tests of some 160 samples collected by him during the summers of 1915-16.

The finding of gold-bearing quartz in Amisk lake, foreshadowed in the quotation above from Mr. Tyrrell's report, created considerable excitement a few years ago. This field has been examined and reported on by E. L. Bruce. The Fond du Lac district at the eastern end of Lake Athabaska also gained considerable notice through alleged discoveries of silver ore, and C. Camsell was dispatched to examine the field. His reports were issued in 1915. The work in this area was continued by F. J. Alcock during the following year.

The building stones of the province have been dealt with by W. A. Parks, whose reports on the building stones of Canada have been issued in five parts by the Mines Branch, Volume IV being devoted to the prairie provinces. L. M. Lambe has reported on the vertebrate fossils of the Cypress Hills and Red Deer lake.

The investigations of these various geologists, covering a period of some sixty years, have determined to a considerable extent the degree of economic value that may be attributed to the mineral deposits of the province and have given the world a knowledge of its geological features. The information contained in the reports of this work is available to those interested by making application to the Geological Survey of Canada, or to the Mines Branch of the Department of Mines, Ottawa.

Coal

The known coal deposits of Saskatchewan are of the lignite variety only. The chief output comes from the vicinity of Estevan, located on the Souris river, near the south-eastern corner of the province. Other deposits exist for 75 or 100 miles along the Souris river, for over 75 miles in an easterly and westerly direction in the Willowbunch-Wood Mountain district and on the South Saskatchewan river about 100 miles southwest of Saskatoon. Small outcrops are reported at various points throughout the province. Rumours of deposits of a better grade coal in the northern parts of the province, at Lac La Ronge which is just south of the Churchill river, have been confirmed.

In his report on the coals of Saskatchewan D. B. Dowling of the Geological Survey of Canada, who is recognized as a leading authority on the coal situation of Western Canada, gives the following information. "The area that is best known is the vicinity of Estevan on the Souris. Mining has been carried on here for several years. The seams are found exposed on the river banks, and located elsewhere by boring. An 8 foot seam is mined, though on some of the properties, near Bienfait, this is thickened up to 15 feet. Over a large part there are, per section, at least 7,000,000 tons of lignite available. Eight townships of this vicinity would, therefore, have a possible 2,000,000,000 tons. Coal will be found north to near Weyburn station, and west of this, outcrops have been recorded on the Souris, in township 3, range 15. Along the International Boundary, in about the same longitude, seams are exposed on Big Muddy creek, draining Willowbunch lake. These are of low grade lignite, and the seams are respectively 3 feet and 5 feet in thickness. At the crossing of Poplar river, in township 1, range 29, west of the 2nd meridian, there is an exposure of an 18-foot seam of lignite of about the same quality of coal at Souris river.

Near the old Mounted Police post at Wood mountain, seams of 6 and 5 feet respectively have been opened, and have proved good domestic fuel. The same may be said of exposures at Willowbunch settlement. West of this the lignite beds underlie portions of the Swift Current plateau. In the Cypress hills, a 4-foot seam is recorded at the head of Lodgepole creek; so that, with the scattered areas in which coal seams have been found exclusive of the Souris area, there are nearly 4,000 square miles on which there is good chance of finding coal. This area is capable of producing, for every foot thickness of coal worked 3,720,000,000 tons, which, with the smallest workable thickness of 4 feet, means 13,000,000,000 tons."

The production by principal operators in 1916 from 33 collieries is shown in the following table:—

*PRODUCTION OF COAL IN SASKATCHEWAN IN 1916, BY PRINCIPAL OPERATORS

Name of Company	Total Production
Western Dom. Collieries, Ltd., Taylorton.....	91,200
Man. and Sask. Coal Co., Ltd., Bienfait.....	71,828
The Bienfait Mine, Bienfait.....	57,306
Sask. Coal, Brick and Power Co., Ltd., Shand.....	26,556
Geo. Parkinson, Estevan.....	7,241
Estevan Coal and Brick Co., Ltd., Estevan.....	4,500
McNeil & Rooks, Estevan.....	3,360
Eidness Bros., Gladmar.....	3,237
Alex. Wilson, Taylorton.....	2,846
H. Nicholson, Estevan.....	1,904
A. G. Clark, Roche Percee.....	1,600
Jos. Bastien, Estevan.....	1,153
Henry V. Heuvel, Hart.....	1,030
All other operators.....	7,539
Total production, Saskatchewan.....	281,300

*Mines Branch, Department of Mines, Ottawa--

The disposal of this is shown in the following table:—

*PRODUCTION AND DISTRIBUTION OF COAL, SASKATCHEWAN, 1916

Distribution	Tons (short)
Sold to Canada.....	261,781
Sold for export to the United States.....	1,725
Total Sales.....	265,506
Used by producers in making coke, steel, brick, etc.....	1,750
Used by producers for colliery consumption and by workmen.....	14,044
Total used.....	15,794
Production.....	281,300

*Mines Branch, Department of Mines, Ottawa--

In addition to this amount coal in small quantities is mined for local use in various places, chiefly by farmers during the winter months. The mines or pits are located on the sides of ravines where coal outcrops occur. The overburden is stripped off and the lignite dug out and hauled away. After digging a few feet into the bank the overburden becomes so thick that the labour of removing it is out of proportion to the value of the fuel recovered. Another site is then selected and the former abandoned.

Regarding the Wood Mountain-Willowbunch coal area, Dr. Rose, who has made an exhaustive study of its condition says "The lignite occurs in flat-lying beds interstratified with clays, sands, and shales. The beds vary in thickness from one inch and less to more than 20 feet. Outcrops are found along the sides

of coulees and abandoned river channels. It is not possible to trace the beds for any great distance as they are in most places covered with soil and grass and, owing to the mode of their deposition in shallow lakes and swamps, form with the clays, sands, and shales a series of interfingering lens-shaped deposits." The following interesting measurements obtained by him of a section exposed in this district illustrates the character of the strata and the number of lignite seams which occur in one section. The coal in this section forms more than one tenth of the total thickness.

*MEASUREMENT SHOWING LIGNITE SEAMS

Exposed section in Willowbunch Lake District
(On Section 2, Township 4, Range 23 West 2nd Meridian).

	Feet	Inches
Sandy clay.....	40	0
Lignite.....	2	0
Grey clay.....	9	0
Shaly sandstone.....	9	0
Yellowish grey clay—sandy streaks.....	17	0
Lignite.....	4	6
Grey clay.....	7	0
Lignite.....	0	6
Sand.....	0	6
Blue clay.....	1	0
Lignite.....	1	0
Blue clay.....	4	0
Lignite.....	0	6
Blue clay.....	1	0
Sandy yellow-grey clay.....	10	0
Lignite.....	0	4
Sand.....	3	0
Banded clay and lignite.....	11	0
Selenite crystals.....		
Sandy grey clay with concretions.....	15	6
Lignite—with bands of clay and sand.....	6	0
Grey sand, grading to clay at bottom.....	25	0
Lignite.....	3	9
Compact, yellow-grey, limy and contains bands of clay-ironstone and sandstone concretions.....	20	6
Lignite—upper part shaly.....	4	0
Limy sand with clay-ironstone concretions.....	15	0
Clay shale.....	2	0
Lignite—2-inch clay parting, 16 inches from the top, this seam is mined.....	6	0
Clay shale.....	3	0
Lignite—reported from boring.....	5	0
From here to bottom of coulee is clay with some lignite indications, mostly grass covered.....	50	0
	277	1

*Dr. Bruce Rose, Geological Survey, Memoir 89, page 58

Lignite is a low grade fuel on account of its moisture content and one of its greatest faults is its inability to retain its original form for any length of time after being mined. On exposure to the air a great deal of its moisture evaporates and it slacks almost to a powder. Attempts have been made to overcome this difficulty as well as to devise other more economical ways of utilizing this fuel. Investigations have been conducted by both the Federal government and the

government of Saskatchewan with considerable success. The possibility of carbonizing and briquetting the lignite appears feasible. This will simplify the shipping and storing of this product and make it an economical and easily handled fuel for the heating of buildings. Gas producer tests of Souris coals have shown them to be a very suitable fuel for this purpose and easily worked. This makes it a desirable fuel for power purposes, the process converting it from a low grade to a high grade fuel in convenient form. If these processes can be put into general commercial practice, as indications now suggest, it will revolutionize the coal situation of Saskatchewan. Her vast fields of lignite, now considered of secondary value, will become a tremendously valuable asset. With a world-wide scarcity of fuel, which is doubly felt in a cold prairie country, the boon for heating purposes alone will be invaluable. As an incentive to industrial undertakings, to the adjacent clay-working industries, for instance, it will prove of inestimable value. The solving of the shipping and storing problem will open up markets beyond the limits of the province itself. The coal situation may therefore be expected to improve rapidly.

Clay

Among other questions to be considered in connection with contemplated clay-working industries the following main ones might be briefly reviewed as existing in southern Saskatchewan.

- I. Material available
- II. Ease of recovery or mining
- III. Fuel for burning
- IV. Transportation
- V. Markets

The first question has been disposed of satisfactorily by the investigations of government experts which go to prove that Saskatchewan's wealth in raw material for this industry is unlimited. A note of warning, however, is sounded, in pointing out that many clays have defective qualities and that thorough laboratory tests should be made to ensure the quality before final location of a plant is determined upon. Suitable raw material, though plentiful, is not easy to determine without such thorough tests. The principal investigations of the clay areas of the province have consisted of preliminary economic surveys by Dr. H. Ries and Mr. Jos. Keele, general geological work by Dr. Bruce Rose in the Wood Mountain-Willowbunch coal district and field investigations and laboratory tests of clays south of the 51st parallel by Mr. N. B. Davis. Some one hundred and sixty samples of clay were collected by Mr. Davis during the summers of 1915-16 and tested in the ceramic laboratory of the Mines Branch, Ottawa, during the following winters under the direction of Mr. Jos. Keele, Chief Ceramic Engineer. In introducing Mr. Davis' report on these investigations Mr. Keele writes. "Its publication is a further contribution to our knowledge of the economic minerals of Canada, and may be deemed specially opportune at the present time, when the commercial demand for refractory materials is—and has been for years past—altogether in excess of the supply. The greater part of the

supply was obtained from foreign sources. The province of Saskatchewan excels in the quality and quantity of that class of raw refractories known as fireclays; and in addition to this valuable material, possesses other argillaceous deposits, from which can be manufactured practically the whole range of structural clay products; a fact of vital importance to a region almost entirely devoid of native timber and building stone."

The recovery or mining of these clays is rendered especially simple by the topographical features of the country. The exposures of clays in deep coulee sides make them easy of access. They are nearly all workable by the open pit method. Even the high grade refractory clays are so well exposed that underground mining will not be necessary for some time to come.

The clayworking industry of the Province at present only includes brick-making and hollow building blocks. The principal brickyards are situated at Estevan, Shand, Claybank, Broadview, and Saskatoon, while fireproofing or hollow blocks as well as brick and drain tile are made at Bruno.

The plant at Claybank manufactures fire brick as well as a fine range of dry pressed face brick and mantel brick. These goods are equal in colour and quality to any brick hitherto imported in the Province.

Clay is mined at two localities, East End and Willows, and shipped to Medicine Hat, where it is used in the manufacture of sewer pipe and stoneware pottery.

There is a great demand for hollow clay building blocks, as these are easily and quickly laid up in walls, but the plant of the Bruno Clay Works is the only place in the Province where they are made at present.

The importance of the clays in Saskatchewan, particularly in the southern portion, is due to the fact that there are many beds of material of higher grade than the usual glacial surface clays which are so widespread in Canada and which are capable only of making common brick.

The white clays in Saskatchewan are suitable for the manufacture of stoneware, Rockingham ware, and white earthenware. Some of these clays when washed appear to be ball clays, and as such could be used in the manufacture of table ware like semi-porcelain. This is the only district in which anything approaching ball clay has been found in Canada. The English ball clays are the ones mostly used for table ware.

Various beds of the white clays can be used alone for the manufacture of pottery, such as teapots, bowls, crocks and jars, or for art pottery of various kinds.

For the finer grades of ware the clay should be washed and screened and mixed with 30 to 50 per cent of powdered quartz and feldspar. This mixture would be suitable for the class of ware known as Doulton, which is made in England.

The attention of teachers in Technical schools and in the Manual Arts department in Public Schools should be directed towards the possibilities of the Saskatchewan clays for modelling purposes in instruction in the plastic arts. Some of the clay beds near East End are pointed out as particularly useful for this purpose.

It is possible that architectural terra cotta, a material now coming largely into use for facing office buildings, can be manufactured from these clays. This

material is not being made in Canada at present, but it is imported in large quantities from the United States and even from England. The terra cotta for St. James Church in Saskatoon was made in England.

In the rougher grades of clay products there are openings for the manufacture of fire brick, stove linings, sewer pipe and electric conduits, paving brick, face brick and in fact all varieties of burned clay products for structural uses, so that the future of the clay working industry of the Province is very promising.

Fuels for firing the kilns have proved an expensive item in the clay industry. To date the supply has been chiefly drawn from the semi-bituminous fields of Alberta, and the long freight haul has resulted in heavy costs. In the Estevan district a certain amount of local lignite is utilized, but its full efficiency is not being realized. Wood is entirely out of the question. A solution of the difficulty appears imminent in the introduction of gas-burning kilns. Recent development in methods of firing intermittent kilns with gas indicate that it is a great saving in fuel and kiln expenses. Drilling for natural gas is being carried on in different parts of the Province, and it is hoped a supply may be found to meet the demands of the clay-working industry. In the meantime, or should these hopes prove abortive, the use of gas produced from local lignite is likely to become general. Extensive tests carried on at the Fuel Testing plant of the Mines Branch at Ottawa have shown that the lignites are ideal for making producer gas for power generation in a gas engine. The gas producer is an economical means of converting a poor fuel to a high-grade one and will prove a boon to the clay-working industries of the Province. In this connection, the working of the clays and lignites together may be made practicable when the recovery of either alone might prove a failure.

The low temperature used in burning common brick may be realized by the use of lignite fuel fired direct. When higher temperatures are used, such as in burning sewer pipe or face brick, and the cost of installing a producer gas apparatus is too expensive, then forced draft should be used. A fan and a system of underground flues are required to send the air under pressure to the fire boxes of each kiln. The use of forced draft enables the time of firing to be reduced, saves fuel and labour, gives high kiln efficiency, and is independent of weather conditions.

Transportation, in the early stages of the industry, or the lack of it, was a serious drawback to its advancement. Not only was it difficult to get fuel to the clay deposits, but it was also as serious a matter to get the finished product to the market. The energies of the railway corporations were directed toward the completion of trunk lines, the inbringing of settlers, and the hauling of crops. With trunk lines now completed in plenty, and even double tracked, the matter of building branch lines and feeders becomes of first importance. With the denser settling of the province and the tilling of more land, the need of local lines becomes apparent. These will serve the clay-working industry and open up areas that otherwise would be valueless. The Weyburn-Stirling branch of the Canadian Pacific Railway has recently opened up valuable clay belts to the south end of Lake-of-the-Rivers and of Frenchman River valley. The Avonlea-Gravelburg branch of the Canadian Northern railway has tapped the northern end of the Lake-of-the-Rivers clay belt and the high grade clays of

Claybank district. Another branch south of the Canadian Pacific, if completed along the proposed route, will open up the clay and lignite areas in the Wood Mountain district.

From the standpoint of the railways themselves, feeders from such districts should prove most valuable, offering a steady flow of freight the year round. The products of the farms are offered almost en masse, causing an annual congestion in the fall, but the clay products flow more evenly.

Without markets within easy reach and offering an unfailing outlet and profitable returns, the industry could not thrive. During the boom days of the West the demand was far in excess of the supply, and prices were a secondary consideration. Nearly all building material had to be imported from Eastern Canada, British Columbia, or the United States, and rich harvests were reaped by firms supplying such wants. Prospects for making speedy profits led to the establishment of numerous brick-making plants throughout the Province. Many of these were hurriedly put into commission without proper forethought or intelligent arrangement and cannot expect to operate on a successful economic basis until scientific methods of operations are introduced. Others were too late for the boom. The general depression following the outbreak of war and the rigid economy exercised along other lines utilizing clay products naturally lessened the activities of the industry. Now that the war is over, and a large influx of new settlers are likely to arrive, business may be expected to resume normal conditions. The country is essentially a farming one, which guarantees its permanency. Its prairie nature makes the farm, as well as the city, an outlet for clay products. The danger from prairie fires, the scarcity of lumber, and the prosperity of the agricultural classes all tend to increase the demand for brick and other burned clay products in the erection of rural buildings.

Other Minerals

Aside from clays and coals all other mineral indications in Saskatchewan can only be classed as prospects or possibilities at the present time, though the outlook of some may be promising. Lack of systematic prospecting and real development has prevented any accurate knowledge of the value and extent of many reported discoveries being obtained. It may be pointed out, however, that even prospecting is in its infancy, and no serious attempt has yet been made to determine the mineral resources of the province. Forecasts would be premature at this time, but certain indications suggest the reasonableness of hoping for encouraging results upon further investigations and would justify a well-directed activity in that direction. A few of these indications or discoveries are briefly reviewed herein, but enlargement upon them is unnecessary.

Gold has been discovered in quartz veins on Amisk lake in what appears to be paying proportions. This district adjoins the Manitoba boundary and the sulphite and gold fields of that province. During the rush of 1912 some 1,500 claims were staked about this lake, but development work of any extent has not been attempted on more than half a dozen of such claims. It is expected that when war conditions have given way to normal, at least three or four mills will be erected. Upon their success will depend the fate of the other claims. In

1908 a stampede took place to Lac la Ronge, where finds of gold-bearing quartz and copper sulphites were reported. No development has followed, though deposits of copper ore are believed to exist there. The presence of iron has been established, though the amounts are uncertain. Silver has been reported at Fond du Lac at the easterly end of Lake Athabaska. A number of claims have been staked, but very little work has been done.

The great flow of natural gas obtained at Medicine Hat, a few miles west of the Saskatchewan-Alberta boundary, and the flows of oil found in other parts of Alberta have stimulated Saskatchewan to attempts to obtain similar products. The oil and gas boom of 1914 resulted in much speculation, but little work. Drilling in many parts of the province, however, is now being quietly carried on with varying success.

Mineral pigments and mineral waters have been noticed in some localities, but are not being utilized. The making of peat presents a possible industry. Gypsum crystals have been found sparingly in shale deposits. Salt springs occur in various places. The alkali lakes that are scattered through the province have an abundance of the soda salts and occasionally the magnesium salts.

Lime can be obtained in plenty from drift boulders. Sand and gravel for building and road-making purposes are widely distributed. Silurian limestone formations occur about Cumberland lake and drift, probably from this source, is found in the Prince Albert-Saskatoon district. The Provincial University buildings at Saskatoon are built from this drift. Quartz and granites are found in the Pre-Cambrian formations outcropping throughout the Churchill basin. Drift boulders from these sources are found in many parts of the province and are utilized as building and road-making material.

The oil shales of the Pasquia Hills present interesting possibilities not only in the distillation of oils but in the production of ammonium sulphate as a by-product to be used as fertilizer. The vast wheat lands of the province will shortly demand attention in keeping up the value of their soils by fertilizers and this is a possible source of supply. Some interesting experiments are being conducted by the University staff in obtaining gas from wheat straw. Many such economic questions in the utilization of resources present themselves. There is room for great work in developing the mineral resources of the province.

FUR, FISH AND GAME

Fur

The beaver, as a popular emblem of Canada, enjoys a most appropriate distinction in being thus honoured. Not only are its industrious habits symbolical of the energy of the peoples inhabiting this great Dominion but its historical associations date back to the beginning of the earliest discoveries and explorations therein. As the maple leaf, its greatest rival for emblematic honours, suggests the wealth of forests throughout the land, so the beaver suggests the wealth of fur. The riches of the latter were the first to attract the eyes of the old world. As the gold of the southern part of the new world lured the mighty forces of ancient Spain to valorous feats of discovery and exploitation so the furs of the north brought forth undaunted commercial crusaders from France and England, whose activities paved the way for the colonization and development of a Dominion they little dreamed of. Emblematical of the quest of their hazardous ventures, the beaver loomed always before their eyes, guiding and luring them on and on through hardship and danger, through good fortune and ill, to fields far beyond their anticipation. It held the distinction of being the fur chosen as headgear by the kings and nobles of European courts; in fact it supplanted the very names commonly applied to such articles of wear and a courtier's "beaver" represented the last word in a gentleman's hat. It also received further distinction in being chosen as a medium of exchange, or unit of value in trade with the natives of the wilds, a beaver "skin" representing a certain value by which all reckonings in trade were made.

The quest for furs was carried into the regions now embraced within the boundaries of the province of Saskatchewan from two sources. The English, represented by the Hudson's Bay Company, gradually found their way inland from York Factory, while the French had pressed westward from Quebec and Montreal. Pierre Radisson, a French Canadian adventurer, in 1663, arrived in Quebec from the Hudson Bay region by way of Lake Superior and the Ottawa river with a cargo of 60,000 beaver skins, worth then half a million dollars. Inspired by his achievements a party of English nobles took up the game with the result that in 1670 the Hudson's Bay Company was incorporated by royal charter, granted by King Charles I. His nephew, Prince Rupert, was made first governor of the company. Their charter gave them almost unlimited authority and the sole right to trade in Hudson Bay and over all the land draining into it. A very vague idea was then held regarding the extent of such land. It was not supposed to extend over a few hundred miles in breadth; in fact navigators confidently expected to find a passage from Hudson Bay to the western oceans and fancied the distance to be but small. Years of exploration were necessary before the vast extent of the lands included in this charter, called "Rupert's Land", was realized. The magnitude of the rights conferred on the company thus proved greatly in excess of what was supposed at the time. As the lands draining into Hudson Bay include almost all of the present provinces of Manitoba and Saskatchewan,

a large area of Alberta, and even certain areas lying south of the International Boundary it may readily be understood that any attempt by the English to lay claim to this vast region would be disputed by the French, who were pushing their discoveries westward from their newly founded colonies on the St. Lawrence. Even after the English had gained possession of Canada the legality of the company's claims was questioned by their own fellow countrymen. Later another phase arose in the situation when the Americans gained their independence and pushed their claims westward. Many years elapsed before these disputes were finally settled.

The Hudson's Bay Company's attempts to extend their trade inland and to hold the sole right over Prince Rupert's Land led to expeditions being sent westerly from York Factory and Fort Churchill, which finally reached the present limits of Saskatchewan. But even before any trade had been established inland by this company numerous French Canadian explorers, adventurers and traders had established a route from Quebec and Montreal westward via the Ottawa river, Georgian Bay, Lake Superior, Lake of the Woods and Lake Winnipeg and were scattering over the western plains and bartering for the furs of the various tribes of Indians they encountered. At first these traders came independently of each other, wild, roving, care-free, and fearless. They scoffed at the privileges of the Hudson's Bay Company and made ruinous inroads into their trade. Later, when in danger of being ousted by this powerful company, they banded together, eventually forming a formidable rival to it in the great Northwest Company. The struggle for supremacy between these great rival fur companies was carried on for years, and the early history of Saskatchewan embraces some of their most bitter commercial feuds. Their final amalgamation saved both from financial ruin.

Associated with the history of these fur dealers are the names of many men who have found fame through their works of discovery. Such names as La Vèrendrye, Hendry, Hearne, Frobisher, Mackenzie and Thompson, form part of Saskatchewan's earliest history.

Records of the Hudson's Bay Company contain accounts of an exploration made in 1691 by one of their employees named Henry Kelsey. He is supposed to have travelled from York Factory to the prairies of central Saskatchewan. Much doubt has been cast upon these reports and even in the event of their authenticity no results of value were attained by Kelsey's wanderings.

The earliest explorations of real value within the present province of Saskatchewan were made by a French gentleman, *Sieur de la Vèrendrye*, and his sons. During the years 1731 to 1748 they explored from Lake Nipigon westerly as far as the Rocky Mountains, southerly to the Missouri and northerly to the main Saskatchewan. They are credited with the erection of a fort in 1748 near the forks of the Saskatchewan, called Fort Lacerne or Nipawi.

The Chevalier de Niverville is credited with having travelled up the Saskatchewan river in 1751. In 1754 Anthony Hendry journeyed up from York Factory, reaching the Saskatchewan river by way of Moose lake. Going up the Saskatchewan he passed the French post of Basquia or Pasquia (now The Pas) and entered the Carrot river, following it up till he reached the plains of central Saskatchewan. He returned the following year with a valuable account of his travels.

To offset the activities of the French traders at Pasquia, Samuel Hearne was sent inland by the Hudson's Bay Company. In 1773 he established the important strategic post of Cumberland House, which for over one hundred years proved a most valuable location in securing the furs of the far northwest and is still in active commission.

In 1775 Joseph Frobisher, independent trader, pushed on beyond this post and intercepted the Indians at Frog portage as they were coming down from the Churchill to trade at Cumberland. He repeated the trick in the following year, while his brother Benjamin went even farther west and established a post at Ile à la Crosse about 1777. In 1778-79 Peter Pond came into fame by carrying the field of trade still nearer the source of its wealth and crossing the divide between the Churchill and Athabaska waters he went as far north as Lake Athabaska and established a post near its south end.

In 1780 there occurred at Eagle Hills a most bloodthirsty massacre of seven white traders by a band of drunken Indians. This blot on the history of the fur trade stands as a monument to the lawless and unscrupulous methods of the traders who freely made use of liquor in inducing the Indians to trade with them. The fur trade suffered a temporary depression owing to a severe smallpox epidemic which swept over the prairies in 1781. Three years later saw the formation of the great Northwest Company. The Frobisher brothers, Simon McTavish and several wealthy Montreal merchants figure in its incorporation. A few of the independent traders, however, not satisfied with this arrangement, formed a company of their own headed by a man who was later to become famous in Canadian exploration, Alexander Mackenzie. These companies, after three years of opposition united in 1787 under the name of the larger, the Northwest Company, to meet the common foe, the Hudson's Bay Company.

During the years 1790-92 Philip Turner made surveys of many of the fur routes while Peter Fidler also came into prominence about this same time on similar work. In 1792 the 49th parallel of latitude was announced as the Canadian-American boundary, thus settling any international disputes that might have arisen between traders in this vicinity. In 1795 David Thompson surveyed the route from Churchill to Athabaska and in 1810 he made his famous trip from Montreal to the Pacific Coast via the Yellowhead Pass.

In 1821 we find the amalgamation of these great rival fur companies of the west, the Hudson's Bay and the Northwest, who continued under the name of the former. This marks, more than any other event, the end of feuds regarding the fur trade. The end of the French power in Canada in 1759 and the adjustment of the American boundary line in 1792 eliminated international controversy.

The birth of the Dominion in 1867 and the steps taken immediately following such event for the acquisition of Prince Rupert's Land led to some dissatisfaction which showed itself in the Riel rebellion of 1869-70 but was quickly adjusted. In 1870, some 200 years after receiving their monopoly to Prince Rupert's Land, the Hudson's Bay Company surrendered it for certain considerations to the

Government of Canada and since that date have carried on the fur trade in more peaceful channels. A statement of their affairs in 1872 puts the total number of their posts at one hundred and forty-four of which about twenty were located in the area now included in the province of Saskatchewan. In the list are included such interesting names as Fort Pelly, Fort Ellice, Qu'Appelle Lakes (Fort Qu'Appelle), Touchwood Hills, Cumberland House, Fort a la Corne, Pelican Lake (Pelican Narrows), Fort Pitt, (now in ruins) Battleford, Carlton House, Prince Albert, Ile à la Crosse, Portage la Loche, Green lake, Fond du Lac and others. Some of the posts mentioned in the earliest records are not included in the list, probably having been abandoned or destroyed previous to this date. One of these is Chesterfield House located at the junction of the South Saskatchewan and Red Deer rivers.

Relieved of their despotic control of Prince Rupert's Land and reduced to the status of an ordinary commercial concern by the arrangements of 1870 the "Great Company" as the Hudson's Bay Company had come to be known, has remained to carry on the fur trade begun in such royal fashion over two hundred years ago. Their posts still extend over the wilds of northern Saskatchewan and the trade with the Indians goes on in primitive and peaceful fashion. In the Revillon Trading Company they have recently encountered keen competition but the rivalry is without the acts of violence which marred the earlier days. The principal channels of this commerce are still the old routes so long used. From the Clearwater by way of Portage la Loche, the lakes and rivers forming the headwaters of the Churchill, Frog portage and the Sturgeon-Weir and Saskatchewan rivers the trappers and traders come and go. From Fort McMurray on the Athabaska to The Pas on the Saskatchewan the old route leads right across the province of Saskatchewan and both these great companies "carry on" at the historic trading places of Ile à la Crosse, Stanley, Cumberland House and elsewhere.

In the more settled parts of the province the posts of the Hudson's Bay Company have adjusted themselves to their changed surroundings and the transition has resulted in a range of business houses from the rude log fur post to the modern departmental stores of the capital cities of the West.

It might be supposed that with the great settlement of the West the fur-bearing animals have disappeared. To a certain extent this is true. The most striking and regrettable instance of this is seen in the annihilation of the majestic buffalo which once roamed over the prairies of Saskatchewan in countless thousands. The robes of these monarchs once constituted the trade of a small army of Indians and whites, and their flesh fed the entire population. With their disappearance went most of the fur trade south of the main Saskatchewan river but north of this river, embracing more than half the area of the province, is a vast hunting ground well supplied with fur-bearing animals of several species. For the year ending June 30, 1917 over one million dollars had been paid to Saskatchewan trappers for their catch of furs. Particulars are shown in the following table. It is interesting to note that the number of beaver taken exceeds 8,500 even after 250 years of toll.

*STATEMENT OF FURS, SASKATCHEWAN

Number and kinds bought during the year ending June 30, 1917

Kind of furs	Number bought	Estimated value per pelt	Estimated total amount paid trappers
Mink.....	6,443	\$ 4 00	\$ 25,772 00
Fisher.....	428	20 00	8,560 00
Marten.....	2,376	10 00	23,760 00
Otter.....	538	10 00	5,380 00
Skunk.....	6,332	2 00	12,664 00
Muskrat.....	719,805	50	369,902 50
Beaver.....	8,565	7 00	59,955 00
Silver Fox.....	154	200 00	30,800 00
Cross Fox.....	1,088	30 00	32,640 00
Red Fox.....	4,037	15 00	60,550 00
White Fox.....	104	30 00	3,120 00
Lynx.....	6,556	15 00	98,340 00
Coyote.....	37,064	8 00	296,512 00
Timber Wolf.....	185	15 00	2,675 00
Wolverine.....	219	10 00	2,190 00
Badger.....	730	2 00	1,460 00
Weasel.....	40,553	70	28,387 10
Bear.....	1,498	10 00	14,980 00
Rabbit.....	20	10	2 00
Miscellaneous.....	112	2 00	224 00
Blue Fox.....	4	50 00	200 00
Muskox.....	14	10 00	140 00
Total.....	836,825		\$1,068,213 60

*Chief Game Guardian, Saskatchewan.

Fish

The northern part of the province of Saskatchewan is a field offering great possibilities in the matter of fish supply. Its numerous lakes and rivers, many of which are of vast proportion, with their deep, clear, cold waters, make an ideal and extensive region for the exploitation of inland fresh water fisheries. The rugged nature of these northern districts is favourable to such an enterprise. The broken, rocky surface of the ground, with forests of spruce and birch, lend to the numerous lakes and rivers scattered throughout the area a depth and clearness of water not found in the plains. Cool and shaded by summer and sheltered by winter the waters are ideal for fish life. The numerous rapids from lake to lake keep the waters fresh and running. The forests breed insect life for fish food in summer time and give shelter to the fishermen in winter. The broken, rocky country in general assures the permanency of the situation.

The varieties of fish which thrive in these waters are numerous and include such valuable species as the trout, whitefish, sturgeon, pickerel and perch. Other species are the tullibee, catfish, goldeyes, pike and ling. Perhaps the best known fish from these regions is the whitefish which is shipped out in a frozen condition during the winter months only. In fact the fish industry has so far been carried on almost entirely during the winter months, the chief exception being sturgeon fishing. The fish are caught in nets placed below the

ice. Freezing as soon as taken from the water they are packed in wooden boxes and sent in a frozen condition direct to the dealer. Carload lots of these are regularly shipped to various points in Canada and the United States and find a ready market. In fact, fried or baked whitefish, secured from this source, has long since gained fame as a most delightful dish. The Indians of these northern regions depend almost entirely on fish as a diet during the whole year. Game is obtained when possible but the fish is the Indian's guarantee of a regular meal. As winter travel is chiefly by dog team in the north, great quantities of the coarser varieties of fish are consumed as dog feed, this being their regular subsistence the year round.

It may be said that the fishing industry of the province is in its infancy. In fact there is as yet no real effort being made to make it otherwise. The remoteness of the fields and the lack of transportation facilities make it a difficult undertaking. The industry has been to a certain extent merely a side line of the great trading companies of the north. Several spasmodic ventures have been made by ambitious individuals, generally without sufficient means or knowledge required for such undertakings, with the varying results that might be expected. If seriously undertaken as a permanent business there is no reason why the obstacles existing should not be overcome and a profitable enterprise established.

The following tables compiled from reports of the Fisheries Branch, Department of the Naval Service, Ottawa, show the principal waters where commercial fishing has been prosecuted together with the values of fish harvested, the values of the various species of fish taken and particulars of the fishermen's outfit. It omits mention of horses and sleighs of which large numbers are employed during the winter months in freighting between the lakes and the railway. Many farmers and homesteaders find winter employment with their teams in this connection.

**SASKATCHEWAN FISH INDUSTRY, YEAR ENDING MARCH 31, 1917*

Northern Saskatchewan

Fishing Districts	Value of fish taken
Cold and Primrose lakes.....	\$ 25,397 00
Frog, Fishing and Prairie lakes.....	956 00
Jack Fish and Murray lakes.....	8,246 00
Turtle and Brightsand lakes.....	2,058 00
Makwa, Waterhen and Flottan lakes.....	9,340 00
Ile à la Crosse lake.....	48,769 00
Dore and La Plonge lakes.....	45,063 00
Okemasis, Devil's and Ladder lakes.....	5,381 00
Montreal and Crean lakes.....	3,652 00
Candle, Emma and Namew lakes.....	8,299 00
Wakaw, Lenore and Barrier lakes.....	14,824 00
La Ronge lakes.....	8,742 00
Green lake and Beaver river.....	1,190 00
Saskatchewan river.....	5,762 00
Total.....	\$ 187,779 00

Southern Saskatchewan

Fishing Districts	Value of fish taken
Lowes and Buffalo lakes.....	\$ 29,997 00
Qu'Appelle.....	3,017 00
Lac Pelletier.....	313 00
Devil's and Fishing lakes.....	3,417 00
Dundurn.....	342 00
Oxbow.....	82 00
Round lake.....	2,328 00
Crooked lake.....	319 00
Katepwe lake.....	3,026 00
Total.....	\$ 42,841 00
Total for Saskatchewan.....	\$ 230,620 00

*Compiled from reports of Fisheries Branch, Ottawa.

*SASKATCHEWAN FISH INDUSTRY FOR YEAR ENDING MARCH 31, 1917

Kinds of Fish	Value taken
Trout	\$ 14,155
Whitefish.....	126,758
Pickarel.....	24,883
Pike.....	41,732
Sturgeon.....	870
Perch.....	120
Tullibee.....	4,725
Goldeyes.....	584
Mixed Fish.....	18,119
Total.....	\$ 231,946

*SASKATCHEWAN FISH INDUSTRY FOR YEAR ENDING MARCH 31, 1917

Equipment used	Value
Boats (sail and row).....	\$ 16,098
Boats (gasolene).....	10,750
Gill-nets, Seines and other nets.....	33,119
Hoop nets.....	235
Lines.....	4,096
Freezers and Ice-houses.....	1,395
Piers and Wharves (private).....	130
Total.....	\$ 65,823

*Compiled from reports of Fisheries Branch, Ottawa.



Kettle Falls, Churchill River, Saskatchewan.

Fish culture is being prosecuted by the Dominion Government at various points throughout the West with great success, and fresh stock from these sources is being continually added to the lakes to prevent the depletion of this valuable resource. Most of the hatcheries are located in Manitoba but there is one in Saskatchewan at Fort Qu'Appelle. It distributes several thousand fry every year in neighbouring lakes.

In the winter of 1917-18 fish were hauled by teams and sleighs from Clear and Ile à la Crosse lakes to Big River, the terminus of the Prince Albert-Big River branch of the Canadian Northern Railway. The distance amounted to as much as 150 miles in an air line or about 200 miles by winter trail. Another winter road was opened into Lac la Ronge where a bountiful supply of first class fish was obtained. The long haul, however, to the end of steel, is a serious obstacle to the success of the industry. In severe weather the hardships encountered on the trail and the difficulties of keeping it in good shape are extreme. The time consumed in transporting the fish from the water to the steel, with high wages and excessive prices for provisions and horse feed add tremendously to the cost of getting the fish to the market. Added to this is the danger of the total loss of the cargo en route should a mild spell of weather occur. Freightage at any other season of the year is out of the question owing to lack of any suitable roads and the impossibility of maintaining an adequate refrigerator service on such systems of transportation.

These obstacles have prohibited the exploitation of such tremendous areas as Reindeer, Wollaston, Hatchett, Black and Cree lakes and Lake Athabaska, bodies of water in the far northern regions of the province most lavishly stocked with many varieties of fish of unsurpassed quality and generous size. When one stops to estimate the resources of Reindeer lake, a body of water 150 miles long by 50 miles wide, teeming with fish of this nature, some idea will be gained of the tremendous values of wholesome food the province has at its disposal.

The winning of these resources nevertheless will not be without its problem but the difficulties of their economic recovery should not be insurmountable. Railway extension to a certain extent is feasible and this will partially solve the problem. But other schemes will bear investigation. Water power is everywhere available and it might be utilized in connection with local industries such as the canning, drying, smoking or other methods of curing and preserving these products at the lakeside. This would give an all the year round industry and permit of the finished products being transported at the most convenient times and in the most economical manner. The many phases of the situation admit of much diversity of opinion regarding the most feasible means of creating an extensive and permanent industry, but that the ultimate success of such is assumed no one doubts.

The fisheries of the province are a federal resource and are administered by the Fisheries Branch, Department of the Naval Service, Ottawa. For purposes of control and administration two districts have been created, Northern and Southern Saskatchewan, each in charge of a local inspector under the direction of the chief inspector whose headquarters are at Indian Head. Commercial fishing is regulated to certain set seasons and subject to certain conditions and can only

be proceeded with under license which must be obtained from the officers of the Fisheries Branch. In the enforcement of the regulation the inspectors are assisted by the provincial police and other officials.

Game

The buffalo that once held sway as monarch of the prairies, and roamed over the southern parts of this province in herds of countless thousands, has gone—and scarcely a blanching bone remains to tell the tale. Regrettable we say; yes, but must the lesson be repeated? The lordly elk is in danger of like fate and only by a whole-hearted effort on our part can he be saved. The moose is in less danger of extermination while in the northern part of the province the caribou roam in herds that appear as limitless in number as did the buffalo herd of by-gone days. But let us not deceive ourselves into believing their extermination might not be as easily permitted to occur as did that of the prairie monarchs. Now is the time to lock the stable door—not after the horse is stolen; and now should our energies be directed in channels of game preservation.

The southern part of the province, being purely a farming and agricultural district, and mostly prairie at that, cannot expect to preserve the same amount of game, particularly the larger animals and fur-bearing species, as the more solitary and rugged northern parts. Yet the graceful antelope, in the sparsely settled and hilly ranching districts near the border, should be permitted to thrive. It is protected by law the year round and hopes are entertained for its increase. That favourite game bird the prairie chicken (pinnated grouse) is also in danger of extermination. The prairies would not seem complete without it and the prosperous farmer, looking back to the early days of his homesteading experience amid loneliness and hardship in his little shack and remembering the friend it was to him in more ways than one, surely cannot begrudge the faithful creatures a corner in his wheat fields in which to raise their little broods. The thoughtful sportsman will also spare them and preserve the species so singularly peculiar to the prairies of the West. The provincial government has wisely protected them also during the entire year. South of township 35 good shooting may be had during the open season (Sept. 15 to December 31) of ducks, geese, rails, coots, black-breasted and golden plover, Wilson or Jacksnipe and greater and lesser longlegs. Many species of fur-bearing animals are also found. North of township 35 game birds, fur-bearing animals and big game animals (moose, elk, caribou and deer) are plentiful, except the elk. It is expected that the hunting of this noble animal will be entirely forbidden for several years and thus prevent its extermination.

Moose are fairly plentiful in the entire wooded districts of the province. They provide envious sport for the farmers, who find their only opportunity for a holiday at the close of threshing operations. During the fall of 1917 fully 75 per cent of the big game licenses sold were issued to this class of hunters, and some 1,650 farmers enjoyed a well-earned holiday in this pursuit. Returns placed the number of moose (male) killed at 1,215. The principal elk district, in fact the only one of any account, is located about thirty miles north and north-east of Prince Albert. Some 152 animals were killed during the season of 1917. Deer are reported to be more numerous than for several years, though only 375 were reported from the hunt of 1917. This is explained by the fact

that most of the big game hunters choose to go after the moose. As the caribou keep well to the distant parts of the province, few are brought out as trophies of the hunt. In 1917 some 64 animals were reported during the season. However, in northern parts the Indians and trappers kill great numbers, in fact, the destruction becomes most wanton and criminal at certain seasons. During the winter of 1917-18 it has been stated on good authority that the Indians of Reindeer lake killed an average of 200 each and a total of 50,000 for the tribe. Much of this meat and nearly all the hide was left to destruction. Too ignorant to realize that they are hastening the day of their own starvation, these tribes should be taught a severe lesson by the authorities, and steps taken to save the caribou from annihilation. Wolves also play havoc with the game, and coyotes imitate their example in respect to smaller fur-bearing animals, game birds, and domestic animals and poultry. Encouragement for the destruction of these animals of prey is given by the provincial government, and during the past eleven years a sum of \$232,041 has been paid out in bounties for the killing of 214,424 coyotes and 1,200 grey wolves. More drastic action is required to protect the northern parts of the province from the ravages of the wolves. The game laws now prohibit the killing of female deer and fawns, but the Indians of the north kill everything on sight at any time of the year. Stricter enforcement of the laws in these parts will be to their ultimate advantage. The hunting ground of the north is an acquisition the province may well be proud of, and it is worthy of every care and protection.

Wise legislation has been exacted in the establishment of several provincial game preserves—large areas of land set aside for the purpose of propagating and perpetuating beneficial birds and animals. Each preserve is in charge of a game guardian, whose duty it is to see that the laws are enforced forbidding the hunting, shooting, trapping, or molestation of these birds and animals and to protect their haunts, as far as possible, from the ravages of animals or birds of prey, fires, vermin, or other agencies which would be detrimental to the success of the undertaking. A number of private preserves are also being conducted under license and are meeting with considerable success. They include four for the raising of foxes, one for deer, and five for wild geese. A start has thus been made in the fur-farming industry. Reports from the game guardians in charge of these various preserves indicate that very satisfactory results are being obtained. Not only are the game and fur-bearing animals and game birds increasing, but many species of beautiful song birds, as well as valuable insectivorous birds, are finding in these preserves safe retreats for the rearing of their young. The following table contains a list of these Provincial Game Preserves.

*LIST OF SASKATCHEWAN GAME PRESERVES

Moose Mountain Game Preserve.....	150 sq. miles	96,000 acres
Cypress Hills Game Preserve.....	75 " "	48,000 "
Beaver Hills Game Preserve.....	100 " "	64,000 "
The Pines Game Preserve.....	160 " "	102,400 "
Duck Mountain Game Preserve.....	80 " "	51,200 "
Porcupine Game Preserve.....	700 " "	448,000 "
Pasquia Game Preserve.....	1,800 " "	1,152,000 "
Fort-a-la-Corne Game Preserve.....	400 " "	256,000 "
Big River Game Preserve.....	360 " "	230,400 "
Total.....	3,820 sq. miles	2,448,000 acres

Also the following preserves of irregular dimension including principally water areas:—

Wascana Game Preserve.....	On Wascana Lake and river
The Isle of Bays Game Preserve.....	In Lake Johnston
North and South Saskatchewan Rivers Game Preserve.....	
Last Mountain Lake.....	Breeding grounds for wild fowl, about 2,500 acres

*Chief Game Guardian, Regina, Saskatchewan.

The wild animals and birds of the province constitute part of its own resources, and legislation governing their protection or disposal is embodied in The Game Act of Saskatchewan. The only exception are such species of migratory birds as fall within the classes affected by the Treaty for the Protection of Migratory Birds. The enforcement of the provisions of The Game Act is carried out by the Saskatchewan Provincial Police, a staff of Provincial Game Guardians, and a large number of voluntary game guardians, now over three hundred, co-operating in this work. All members in good standing of any game protection association in Saskatchewan, issuers of game licenses, and city, town, and village constables are ex-officio game guardians under the provisions of The Game Act.

Permit or license must be obtained from proper officials for the hunting, shooting, or trapping of game, birds or animals, and for the transportation or exportation of their meat, hide, or heads. Trappers and fur traders are also required to hold licenses. Before taking any action in connection with these sports or pursuits, parties should acquaint themselves thoroughly with the terms of The Game Act.

The administration of this Act is undertaken by the Department of Agriculture under the direct control of a chief Game Guardian. In this connection the department has made provision for a Provincial Museum, of which the chief game guardian is curator. Good progress has been made in gathering together a collection of representative birds and animals of the province. These have been mounted and placed on exhibition in the museum, together with a varied collection of articles of historic or other interest. The wild life of the province is exceedingly interesting and prolific and forms a valuable resource. The museum will fill an important place in spreading knowledge regarding the many species comprising such life and in moulding a proper viewpoint regarding its taking or protection.

*SYNOPSIS OF CANADIAN NORTHWEST LAND REGULATIONS

What Land Available

All surveyed agricultural Dominion Lands in Saskatchewan which are not disposed of and not reserved or occupied, are open to homestead entry.

Islands are reserved from entry.

An entry does not include the Mineral or Water Rights.

Lands within 15 miles of a railway are reserved for Soldier Settlement.

Who May Make Homestead Entry

The sole head of a family, or any male over eighteen years old, may homestead one quarter-section of available Dominion land in Saskatchewan. Applicant must appear in person at the Dominion Lands Agency or Sub-Agency for the district. Entry by proxy may be made at any Dominion Lands Agency (but not Sub-Agency), on certain conditions.

NOTE.—No application for an entry for a homestead shall be granted unless the person making the application was at the commencement of the war, and has since continued to be a British subject or a subject of a country which is an ally of His Majesty, or a subject of a neutral country, and unless he establishes the same to the satisfaction of the Minister of the Interior. This does not apply to members of the Canadian Expeditionary Forces naturalized since the war began.

An Agent may reserve one available quarter-section as a homestead for a minor over seventeen years of age until he is eighteen, on certain conditions.

Where Entry is Made

Application for homestead entry may be made by a person eligible under the provisions of "The Dominion Lands Act," either at the Land Agency for the district in which the land is situated, or at the office of a Sub-Agent authorized to transact business in the district.

Duties

Six months' residence upon and cultivation of the land in each of three years. A homesteader may live within nine miles of his homestead on a farm of at least eighty acres, on certain conditions. A habitable house is required except where residence is performed in the vicinity.

The area of cultivation is subject to reduction in case of rough, scrubby or stony land. Live stock may be substituted for cultivation under certain conditions.

When to Begin Residence

A homesteader is allowed six months from the date of his entry within which to perfect the same by taking possession of the land and beginning his residence duties. Any entry not so perfected within that period is liable to cancellation.

*Dominion Lands Branch, Department of the Interior, Ottawa.

SYNOPSIS OF MINING REGULATIONS*

Coal

Coal mining rights may be leased for a period of twenty-one years, renewable at an annual rental of One Dollar an acre. Not more than 2,560 acres shall be leased to one applicant. A royalty at the rate of five cents per ton shall be collected on the merchantable coal mined.

A fee of Five Dollars shall accompany each application for a lease. This fee will be refunded if the rights applied for are not available, but not otherwise.

Petroleum and Natural Gas

The petroleum and natural gas rights which are the property of the Crown may be leased to applicants at a rental of twenty-five cents per acre, for the first year, and for each subsequent year a rental at the rate of fifty cents an acre, payable yearly in advance. The term of lease shall be twenty-one years, renewable for a further term of twenty-one years.

Application for a lease shall be made by the applicant in person to the Agent of Dominion Lands for the district in which the rights applied for are situated, or to a sub-agent for such district for transmission to the Agent. In case the location is in unsurveyed territory it shall be staked out by the applicant in person.

A fee of Five Dollars and the rental for the first year shall accompany each application for a lease. This fee and rental will be refunded if the rights applied for are not available, but not otherwise.

Limestone, Granite, Slate, Marble, Gypsum, Marl, Gravel, Sand, Clay, or any Building Stone

Dominion lands containing limestone, granite, slate, marble, gypsum, marl, gravel, sand, clay or any building stone may be leased by the Minister at an annual rental of One Dollar per acre, payable yearly in advance, for the purpose of quarrying out and removing therefrom stone or other material mentioned herein.

The term of the lease shall be twenty-one years, renewable for a further period of twenty-one years.

The maximum area of a quarrying location shall be forty acres, and no person shall be allowed to locate more than one location.

Application for a location comprising land shall be filed by the locator in person with the Agent of Dominion Lands for the district in which the location is situated. In unsurveyed territory no location is to be staked out.

A fee of Five Dollars shall accompany each application for a lease. This fee will be refunded if the rights applied for are not available, but not otherwise.

Clay locations are leased upon the condition that a plant suitable for the manufacture of brick or other clay products shall be erected within two years from the date of the lease, and further that in each year of the term of the lease after the second year there shall be produced ready for shipment not less than One Hundred Thousand bricks or their equivalent in some other form.

Quartz Mining

Any person having discovered mineral in place may locate a claim, 1,500 by 1,500 feet by marking out the same with three legal posts, one at each end of a location line, and a third at the spot where the mineral in place has been discovered. The two location posts must have the name of the claim, a description of the ground, date of location and locator's full name written legibly upon them. The discovery post shall be marked "Discovery Post," and No. 1 post marked "Initial Post."

The claim shall be recorded within fifteen days if located within ten miles of a Mining Recorder's office; one additional day allowed for every additional ten miles or fraction thereof. The fee for recording a claim is Five Dollars.

At least One Hundred Dollars must be expended on the claim each year or paid to the Mining Recorder in lieu thereof. When Five Hundred Dollars has been expended or paid, the locator may, upon having a survey made, and upon complying with other requirements, lease the land, and permission may be granted to group any number of adjoining claims up to eight in number for representation work, upon taking out a certificate of partnership before the commencement of the work.

If any person satisfies the recorder that he is about to undertake a bonafide prospecting trip and files a power of attorney from any number of persons not exceeding two authorizing him to stake claims for them in consideration of their having enabled him to undertake the trip, he may stake one claim in the name of each such person upon any lode or vein which he may discover.

*Mining Lands and Yukon Branch, Department of the Interior, Ottawa.

SYNOPSIS OF TIMBER REGULATIONS*

Timber may be cut on vacant Dominion Lands in the Province of Saskatchewan either under license or under permit.

Berths under license are disposed of at public auction at the office of the Dominion Crown Timber Agent for the district in which the berth is situated. No berth of this character shall contain more than an area of twenty-five square miles. Before the berth is sold, it is surveyed and cruised by a competent official of the department, and is offered for sale at an upset price, after being advertised for at least sixty days. The licenses cover one year, but are renewable from year to year until the merchantable timber has been removed, provided the conditions are complied with. Timber of a less diameter than 10 inches at the stump is not covered by the license. The licensee is required to pay an annual ground rental of \$5 per square mile, one-half the cost of fire-guarding the timber on his berth, and royalty on all timber cut. The royalty on sawn lumber is 50 cents per thousand feet B.M.

Permits may be issued to owners of portable sawmills to cut lumber, shingles and lath on berths not exceeding one square mile in area. All permits are issued for one year and are renewable for the second year only. Ground rental is charged at the rate of \$100 per square mile per annum, in addition to royalty dues on all timber cut. These permits are issued only in districts where the settlers cannot secure lumber for their own use in the ordinary way. South of the Saskatchewan river all timber cut under these permits must be sold to settlers residing within a radius of fifty miles of the berth, but north of the river the products may be sold to settlers residing more than fifty miles from the berth, and to other than settlers on payment of dues at the rate of \$1.50 per thousand feet B.M. in the case of lumber. Settlers residing within fifty miles are charged 50 cents per thousand.

Permits may be granted to cut timber as cordwood, pulpwood, fence posts, telegraph poles, or for mining purposes on tracts of land not exceeding one square mile. The rental is at the rate of \$100 per annum, in addition to certain royalty dues on all timber cut. These permits are renewable for the second year only.

Actual settlers and persons living in cities, towns and villages may obtain permits to cut up to 100 cords of wood for sale, on payment of dues at the rate of 25 cents per cord.

Homesteaders having no timber of their own may secure free permits to cut certain quantities of timber for use on their land.

Owners or operators of mines may secure permits to cut such timber as they may require in the development of their mines, on payment of dues of one-eighth cent per lineal foot for timber under 5 inches in diameter at the butt end, one-quarter cent for timber from 5 to 9 inches, and one-half cent for timber over 9 inches.

*Timber and Grazing Branch, Department of the Interior, Ottawa.

SYNOPSIS OF GRAZING REGULATIONS*

Grazing leases of vacant Dominion Lands unfit for agricultural purposes may be issued to British subjects for a period of ten years. The lands covered shall not be open to settlement during continuance of the lease. No person or company shall be permitted to hold under lease more than 12,000 acres.

The lessee shall, within each of the three years from the date of the lease, place upon the tract of land leased not less than one-third of the whole number of stock which is required to be placed upon the leasehold, namely, one head of cattle, or five head of sheep, for every thirty acres of land covered by the lease, and shall during the rest of its term, maintain stock thereon in that proportion, and at least 25 per cent of the stock shall be breeding stock.

The lessee shall be required to enclose his leasehold by a suitable fence.

The lessee shall pay an annual rental at the rate of two cents per acre for every acre covered by the lease, payable half-yearly in advance.

The lessee shall be entitled to the hay on his leasehold and he may cultivate any portion of his leasehold for the purpose of growing winter feed for his stock, but shall not have the right to dispose of any such feed or hay by barter or sale.

Yearly grazing permits are issued on School Lands expiring the 1st of April following the date of issue, but are renewable at the option of the Department provided application for renewal, accompanied by the rental for the following year, is made before the 1st of February of each year. All applications for grazing permits or renewals thereof should be made direct to the Agent of Dominion Lands for the district in which the land is situated. The yearly rental is six cents per acre in Manitoba and four cents per acre in Saskatchewan and Alberta.

*Timber and Grazing Branch, Department of the Interior, Ottawa.

SYNOPSIS OF THE SASKATCHEWAN GAME LAWS

THE GAME ACT AND THE USEFUL BIRDS ACT

Protected at All Times

- 1. Buffalo and antelope
- 2. Female deer and the fawns of any deer
- 3. Deer, caribou, moose and elk south of Township 35
- 4. Prairie chicken (Sharp-tailed Grouse and Pinnated Grouse), Ruffed Grouse or Partridge, Canada or Spruce Grouse, Sage Grouse, Cranes, Swans, Pelicans, Loons, Bitterns, Gulls, Terns and Insectivorous Birds
- 5. All animals and birds within the Provincial Game Preserves

Unlawful

- 1. Shooting or hunting on Sunday
- 2. Shooting or hunting between one hour after sunset and one hour before sunrise.
- 3. Use of poison, nets, automatic guns, night lights, etc.
- 4. Allowing dogs at large in haunts of deer
- 5. Shooting or hunting on any person's land without permission from the owner
- 6. Shooting or hunting without a license (except resident farmers in the case of game birds only)
- 7. Carrying loaded firearms in any vehicle
- 8. Offering game of any kind for sale.

Chart of Seasons

Open Season—White - - - Closed Season—Black

BAG LIMIT Big Game, one Moose, one Elk, two Deer, two Caribou, males only, but not more than two animals in all. Ducks and Geese, 50 a day, total 250 for season. PENALTY for violation of Law -- \$10.00 to \$1,000.00 or imprisonment.	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER
	Buffalo, Antelope, Female Deer, Fawns, Big Game Animals (south of Township 35) - - -											
Deer, Caribou, Moose, Elk, (north of Township 34) - - - - -											15 th	14 th
Ducks, Geese, Rails, Coots, Black-breasted, and Golden Plover, Wilson or Jacksnipe and Greater and Lesser Yellowlegs - - - - -									15 th			
Prairie Chicken (Sharp-tailed Grouse and Pinnated Grouse), Ruffed Grouse or Partridge, Canada or Spruce Grouse, Sage Grouse, Grynes, Swans, Pelicans, Loons, Bitterns, Gulls, Terns and Insectivorous Birds - - - - -												
Mink, Fisher, Marten, Fox - - - - -												
Otter, Muskrat - - - - -												
Beaver (except on game preserve and where protected by municipality) - - - - -												

Licenses

Before commencing shooting, hunting, trapping or fur trading a license must be obtained. The fees vary according to the nature of the license and the place of residence of the applicant. The storage, sale and export of meat, furs, heads, etc., is also regulated. Application for fuller particulars should be made to

F. BRADSHAW,
Chief Game Guardian, Regina, Saskatchewan

PRAIRIE AND FOREST FIRES

Extracts from "The Prairie and Forest Fires Act"—Saskatchewan

3. Any person who directly or indirectly, personally or through a servant, employee or agent:

- (a) kindles a fire and lets it run at large in any woods, on prairie, meadow, marsh or other open ground not his own property; or
- (b) kindles and leaves a fire burning, without taking effectual means to prevent its spreading in any woods, or on prairie, meadow, marsh or other open ground not his own property; or
- (c) intentionally or by carelessness permits fire to pass from his own land to the injury of the property of another person; shall be guilty of an offence and liable on summary conviction to the penalties mentioned in this Act.

4. (1) Any person may kindle a fire in a wood or in prairie, meadow, marsh or other open ground, for cooking, warmth, branding or other industrial purpose, on the following conditions. He shall:

- (a) select a place in a neighbourhood where there is the smallest quantity of combustible material or the least likelihood of fire spreading;
 - (b) clear the space in which the fire is to be lit by removing all vegetable matter, dead trees, branches, brushwood and dried leaves from the soil within a radius of ten feet from the fire.
- (2) He shall also exercise and observe every reasonable care and precaution to prevent such fire from spreading and shall before leaving carefully extinguish it.

5. (1) No person shall, directly or indirectly, personally or by a servant, agent or employee, kindle a fire for the purpose of guarding property, burning crops or stubble or clearing land, unless the land on which the fire is started is at the time completely surrounded by a fireguard not less than twenty feet in width consisting of land covered with snow or water or so worn, graded, ploughed or burned over as to be free from inflammable matter.

(2) Any person kindling a fire for any of such purposes shall, during the whole period of its continuance, cause it to be guarded by three adult persons provided with proper appliances for extinguishing prairie fire.

6. The penalties imposed by this part shall not apply to any person who, in order to save life or property from a running fire in open prairie, kindles a fire and lets it run.

7. Any person who, by himself, his servants or agents or anyone acting by or under his authority, in the process of opening up a road allowance, private road

or trail, obtaining fuel, clearing the right of way for a railway, telephone or telegraph line or route or clearing land for any purpose whatever, cuts any timber bush or brush, shall cause the fallen timber, timber slashings and refuse to be collected into piles suitable for burning on such right of way, road allowance, private road, trail or clearing, and shall burn the same at the time of cutting, provided that:

- (a) the circumstances and surrounding conditions are such that there will be no probable danger from spread of the fire; or
- (b) a sufficient number of men are present to prevent it from spreading; otherwise such fallen timber, timber slashings and refuse shall be burned between the fifteenth day of November following the date of cutting and the first day of April then next ensuing.

8. Any person, who, by himself, his servants or agents or anyone acting by or under his authority, sets fire to timber standing in the soil, or to fallen timber, timber slashings or refuse in such manner and under such circumstances and conditions as render it dangerous or probable that the fire will spread and cause the destruction of wood, timber or property not his own, shall be guilty of an offence and liable upon summary conviction to a penalty of not less than \$50 nor more than \$200, and in default of payment thereof to imprisonment for any term not exceeding twelve months.

9. (1) No person shall, without the written permission of a fire guardian, set fire to or burn any trees, brush or shrubs while standing in the soil, or any fallen timber, timber slashings, wood, branches, brushwood, plants, black loam or light soil, between the first day of April and the fifteenth day of November next ensuing, within:

- (a) any area north of township fifty, excepting township fifty-one in ranges sixteen to twenty-eight inclusive, townships fifty-two and fifty-three in ranges twenty to twenty-eight inclusive, all west of the third meridian; or
- (b) the wooded area comprised of township forty-six in ranges seven to nine inclusive, townships forty-seven and forty-eight in ranges seven to eleven inclusive, townships forty-nine and fifty in ranges seven to thirteen inclusive, all west of the third meridian; or
- (c) six miles of any Dominion Forest Reserve.

39. (1) Any person who in or upon any prairie, meadow, marsh or forest throws away or drops any burning match, ashes of a pipe, lighted cigar or cigarette, or any other burning substance, or who discharges any firearms, shall completely extinguish, before leaving the spot, the fire of such match, ashes of a pipe, cigar, cigarette, wadding of the firearm or any other burning substance.

***SYNOPSIS OF CUSTOMS AND FREIGHT REGULATIONS.**

COMPILED FOR THE INFORMATION OF INTENDING SETTLERS.

Customs Regulations

A settler may bring into Canada, free of duty, live stock for the farm on the following basis, if he has actually owned such live stock abroad for at least six months before his removal to Canada, and has brought them into Canada within one year after his arrival, viz.: If horses only are brought in, 16 allowed; if cattle are brought in, 16 allowed; if sheep are brought in, 160 allowed; if swine are brought in, 160 allowed. If horses, cattle, sheep and swine are brought in together, or part of each, the same proportions as above are to be observed.

Duty is to be paid on live stock in excess of the number for which provision is made as above. For customs entry purposes a mare with a colt under six months' old is to be reckoned as one animal; a cow with a calf under six months' old is also to be reckoned as one animal. Cattle and other live stock imported into Canada are subject to quarantine regulations.

The following articles have free entry:

Settlers' effects, free, viz.: Wearing apparel, household furniture, books, implements and tools of trade, occupation or employment; guns, musical instruments, domestic sewing machines, typewriters, live stock, bicycles, vehicles, tractors valued at \$1,400 or less, until further notice admitted free of duty, and agricultural implements in use by the settler for at least six months before his removal to Canada, not to include machinery or articles imported for use in any manufacturing establishment or for sale; also books, pictures, family plate, furniture, personal effects and heirlooms left by bequest provided that any dutiable articles entered as settlers' effects may not be so entered unless brought with the settler on his first arrival, and shall not be sold or otherwise disposed of without payment of duty until after twelve months' actual use in Canada.

A settler may be required to take oath that all of the articles have been owned by himself or herself for at least six months before removal to Canada; that none have been imported as merchandise, for use in a manufacturing establishment or as a contractor's outfit, or for sale; that he or she intends becoming a permanent settler within the Dominion of Canada and that the "live stock" enumerated is intended for his or her own use on the farm which he or she is about to occupy (or cultivate), and not for sale or speculative purposes nor for the use of any other person or persons.

Freight Regulations

1. Carload shipments of farm settlers' effects must consist of the following described property of an actual farm settler, when shipped by and consigned to the same person.

Household goods and personal effects, all second hand, and may include: Agricultural implements and farm vehicles, all second-hand (will not include automobiles).

*Department of Immigration and Colonization, Ottawa.

Live stock, not exceeding a total of ten head, consisting of horses, mules, cows, heifers, calves, oxen, sheep, or hogs (from Eastern Canada not more than six head of horses and mules may be included in a car of farm settlers' effects.)

Lumber and shingles (pine, hemlock, spruce, or basswood), which must not exceed 2,500 feet in all, or the equivalent thereof, or in lieu of (not in addition to) the lumber and shingles, a portable house, knocked down, may be shipped.

Seed grain, trees, or shrubbery. The quantity of seed grain must not exceed the following weight: Wheat, 4,500 pounds; oats, 3,400 pounds; barley, 4,800 pounds; flax seed, 400 pounds. From points in Western States, 1,400 pounds of seed corn may also be included.

Live poultry, (small lots only).

Feed, sufficient for feeding the live stock while on the journey.

2. Live Stock.—Should a settler wish to ship more than ten head of live stock (as per Rule 1) in a car, the additional animals will be charged for at the less-than-carload live stock rate (at estimated weights as per Canadian Freight Classification), but the total charge for the car will not exceed the rate of a straight carload of live stock.

When live stock forms part of the shipment, the usual live stock form of contract must be signed. Shipper must show on the live stock contract the numbers of head of each kind of stock loaded in car. Agents will require attendants to affix their signatures in blank space provided for same on face of Live Stock Contract.

3. Passes.—One man will be passed free in charge of full carloads of settlers' effects containing live stock, to feed, water, and care for them in transit, subject to conditions specified in the Canadian Freight Classification. No reduced return transportation will be given.

4. Top Loads.—Agents do not permit, under any circumstances, any article to be loaded on the top of box or stock cars; such manner of loading is dangerous and absolutely forbidden.

5. Settlers' effects, to be entitled to the car load rates, cannot be stopped at any point short of destination for the purpose of unloading part. The entire car load must go through to the station to which originally consigned.

7. The carload rates on Farm Settlers' Effects are based on minimum weight per car, of:

From points north of St. Paul or Duluth.....	24,000 pounds.
North of Chicago, Kansas City, of Omaha to Duluth or	
St. Paul.....	20,000 “
South and east of Chicago.....	12,000 “

Additional weight will be charged at proportionate rate.

From points south and east of Chicago only five horses or head of live stock are allowed in any one carload. Any number over five will be charged extra.

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